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# **Health Care Facilities Construction and Maintenance**

**A Study of Construction and  
Maintenance Activities, Needs, and  
Procurement Policies of the Health  
Care Industry in the United States**

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## General Introduction

This document contains the results of two surveys aimed at studying the construction activities, maintenance needs, and procurement policies of the U.S. hospitals and long term care facilities. A similar study conducted in 1989 was used as a baseline of the trend analysis presented in portions of this study. This 1996 survey did not ask some of the questions which were posed in the 1989 survey. Likewise there were questions concerning the trends of spending projection, major facility maintenance problem areas, and the source of maintenance requirements that were added to this survey.

The survey results show there are some marked differences between hospitals and long term care facilities. The average occupancy rate and number of admissions per year for hospitals are 66% and 8495, compared to 95% and only 199 respectively for long term care facilities. Hospitals also have a higher percentage of public ownership. The average construction budget for hospitals is three to ten times greater than that of long term care facilities, while the average number of set-up beds is almost the same.

On the other hand, the order of relative expenditures broken down by the different areas of the facility and the order of contributing cause for major maintenance and repairs are consistent between hospitals and long term care facilities.



## Regional Division of Facilities

The United States was divided into the seven regions shown in Figure 1 for the purpose of this study. Tables 10 and 20 summarize the respective regional differences in the hospital and long term care facilities.

### Hospitals

Region	overall	1	2	3	4	5	6	7
Increase Significantly	25.4%	27%	14.3%	64%	43%	40%	22%	26%
Increase Slightly	11.6%	8%	14.3%	9%	14%	13%	13%	11%
Remain Roughly Same	26.0%	27%	38.1%	27%	0%	13%	22%	32%
Decrease Slightly	18.5%	19%	19.0%	0%	0%	27%	26%	5%
Decrease Significantly	18.5%	19%	14.3%	0%	43%	7%	17%	26%

### Long Term Care Facilities

Region	overall	1	2	3	4	5	6	7
Increase Significantly	26.5%	10%	40%	100%	25%	0%	56%	33.3%
Increase Slightly	23.5%	10%	10%	0%	50%	0%	22%	33.3%
Remain Roughly Same	28.4%	40%	30%	0%	0%	100%	22%	16.8%
Decrease Slightly	7.9%	20%	0%	0%	0%	0%	0%	8.3%
Decrease Significantly	13.7%	20%	20%	0%	25%	0%	0%	8.3%



Figure 1: Relative Construction Budget Trends by Study Regions





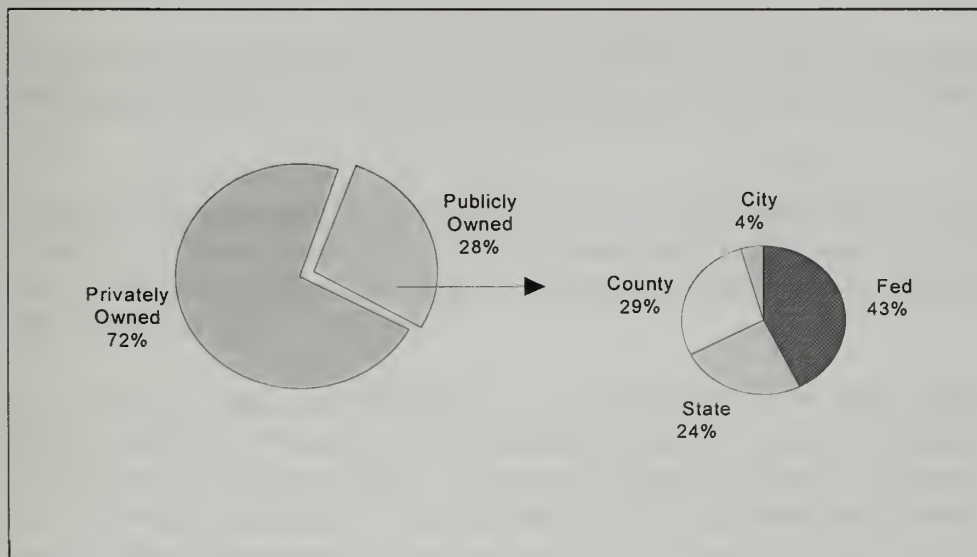
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## *Construction and Maintenance Activities, Needs, and Procurement Policies of Hospitals*

### DESCRIPTION OF HOSPITAL RESPONDENTS

A total of 173 responses were received from hospitals throughout the United States. These respondents represented facilities with an average of 309 licensed beds and 244 set-up beds. They also represented an average of 25 intensive care or critical care beds, 93 private rooms and 110 semi-private rooms. About 22 percent of the respondents (38 hospitals) also had wards.

The average occupancy rate was 66.3% with an average of 8,495 admissions per year or an equivalency of 34.8 admissions per set-up bed. The average age of the primary hospital structure was 30 years. Approximately 28% of the responding hospitals were publicly-owned, of which 43%, 25%, 29%, and 4% were owned by federal, state, county, and city agencies, respectively (Figure 2). While this survey represents fewer hospitals and fewer number of beds per facility than the previous study, percentage breakdowns are quite similar. Notable exceptions are a lower occupancy rate (from 71% to 66%) and a higher percentage of federally owned hospitals (from 28% to 43%) among the publicly-owned facilities. See Table 1 for details.



**Figure 2: Breakdown of Private and Publicly-Owned Hospital Facilities**



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## CONSTRUCTION ACTIVITY

Table 2 contains and Figure 3 depicts construction expenditure figures for 1995, 1996, and 1997. The average amount spent on construction during 1995 was \$5.6 million. Of this, 29% was allocated to new construction, 19% was spent on maintenance and repairs, and 51% was spent on renovation and remodeling.

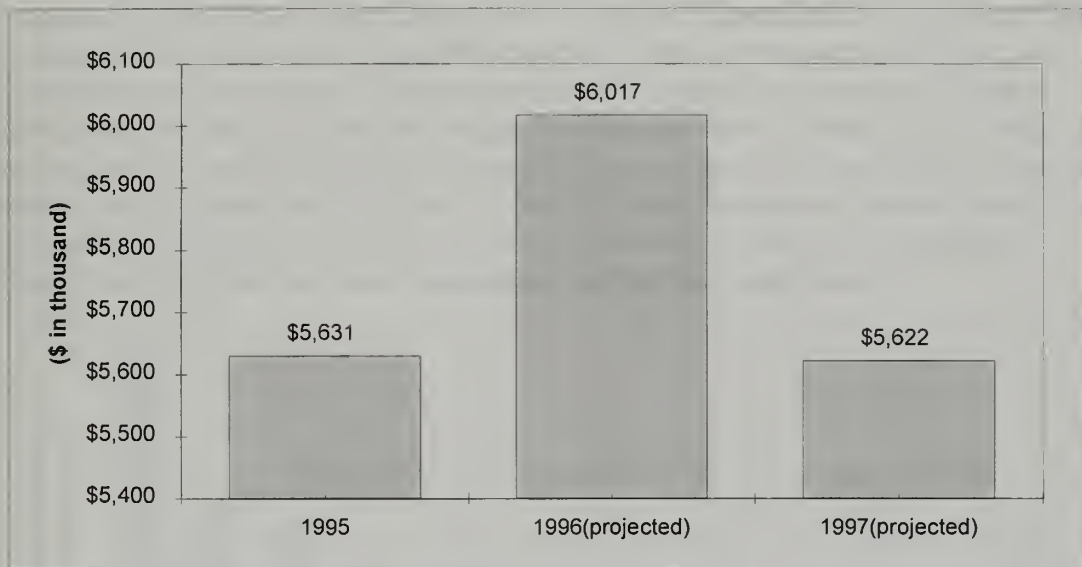
In response to the question of the general nature of construction, addition of the support space (laboratories, pharmacy, radiology space, etc.) accounted for 23%, followed by patient rooms for 11%, administrative space for 5.1%, operating rooms for 3.2%, psychiatric ward for 2.9%, and Alzheimer's ward for 0.4%. (Figure 4) The majority of respondents (53%), however, indicated that these funds were spent in "other" areas, which included general renovation/remodeling (27 respondents), outpatient facilities (12 respondents), emergency room expansion (9 respondents), clinics (8 respondents), parking (6 respondents), ambulatory care (6 respondents), MD offices (5 respondents), life safety code requirements (4 respondents), utility upgrade (4 respondents), and facelift (3 respondents). Some funds were channeled into new service areas. Examples of new or expanded services include sleep lab, express care room, TB Iso room, community education facility, youth development facility, CRC lab, cardiovascular program space, and radiation therapy wards. Some other areas mentioned were infrastructure, roof repairs, window replacement, conversion from semi-private to private rooms, replacement of beds, skilled nursing facility, urgent care facility, environmental upgrade, and fire alarm system upgrades.

The survey indicated only 16.4% (an average of \$487,000) of the construction work (not including maintenance and repairs) was performed by hospital in-house personnel in 1995.

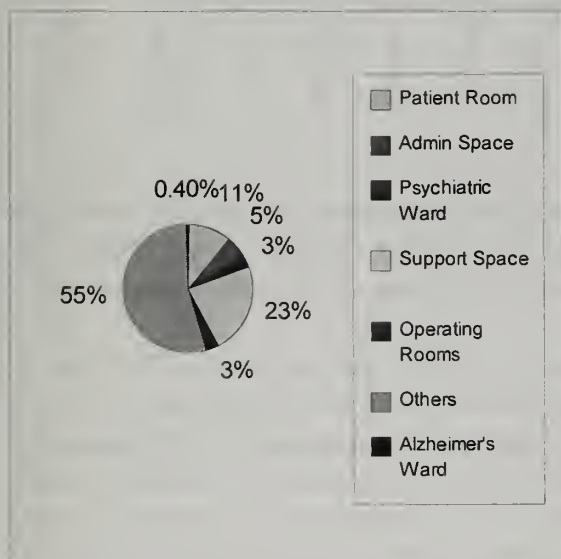
Hospital respondents projected that they would be spending an average of \$6,017,000 in 1996 (25% for new construction, 23% for maintenance/repairs, and 52% for renovation) and \$5,622,000 in 1997 (31% for new construction, 21% for maintenance/repairs, and 48% for renovation).

In projecting construction budgets for the next five years (1997-2001), Figure 5 shows 25%, 12%, 25%, 19%, and 19% of respondents respectively marked "Increase Significantly", "Increase Slightly", "Remain Roughly the Same", "Decrease Slightly", and "Decrease Significantly". Approximately 20% of all construction expenditures are received from government sources such as direct appropriations, tax supported bonds, etc. See Table 2 for further details.

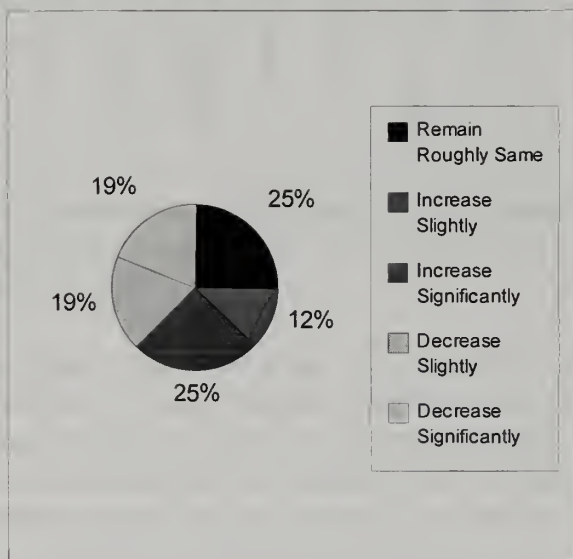




**Figure 3: Construction Expenditures**



**Figure 4: General Nature of Construction**



**Figure 5: Construction Budget Trends for Next 5 years (1997-2001)**

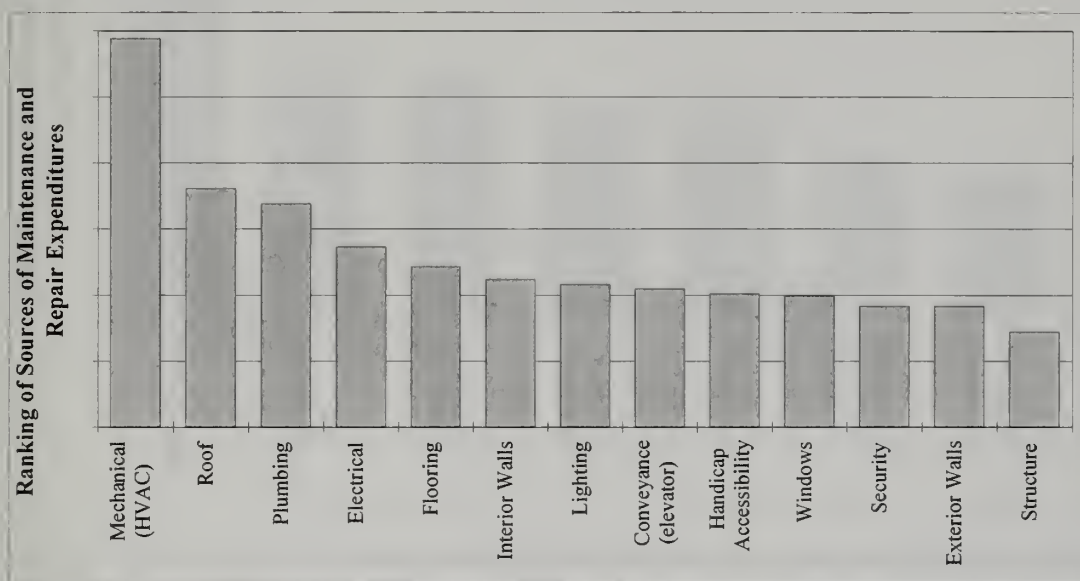




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## MAINTENANCE ACTIVITY

A series of questions were asked about the maintenance aspects of the facility (see Table 3). Figure 6 shows the tally of responses to the question of the source of major maintenance and repair costs. Mechanical (HVAC) system was ranked the highest (greatest expenditure), followed by roof, plumbing, electrical, "others" (not shown), flooring, interior walls, lighting, conveyance(elevator), handicap accessibility, windows, exterior walls, security, and structure. A total of seven respondents marked "others" for this question. The list of "others" consisted of life safety, steam plant, fire alarms, asbestos removal, parking, water distribution, and ground maintenance.



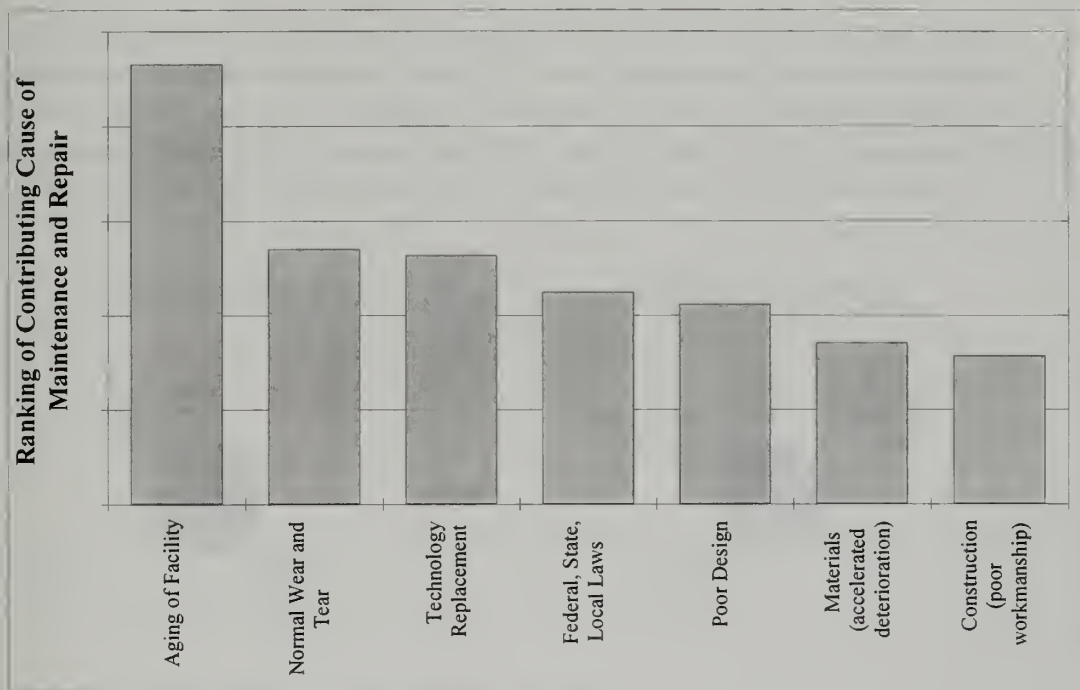
**Figure 6: Relative Expenditures on Major Maintenance and Repair** (Actual figures from Table 3 were adjusted by taking the inverse of a modified scale, 1-10, for a better visual representation of the ranking of expenditures)

A total of 70 responded on a question of what change would be made if any particular system or component were to be replaced based on the past problems. The largest group of respondents (41 respondents) expressed their concerns over HVAC systems, wanting either an increase in the capacity of the system, conversion of the system to DDC (Direct Digital Control), or more efficient Air Conditioning and Heating. Each of these desires reflects dissatisfaction with earlier system specifications. The roofing system was a concern for many respondents, but no clear conclusion could be drawn as to which type of roofing system was favored by most respondents. Some other examples of the changes they would like to make were more efficient lighting systems, flexible facilities, design, and elevator upgrade.





Figure 7 shows the response to the question of the cause of major maintenance and repair costs. Aging of the facility was ranked the highest (most contributing cause), followed by normal wear and tear; technology replacement; federal, state, and local laws; poor design; materials (accelerated deterioration); construction (poor workmanship); and "others".



**Figure 7: Relative Contributing Cause for Major Maintenance and Repair** (Actual figures from Table 3 were adjusted by taking the inverse of a modified scale, 1-10, for a better visual representation of the ranking of contributing cause)

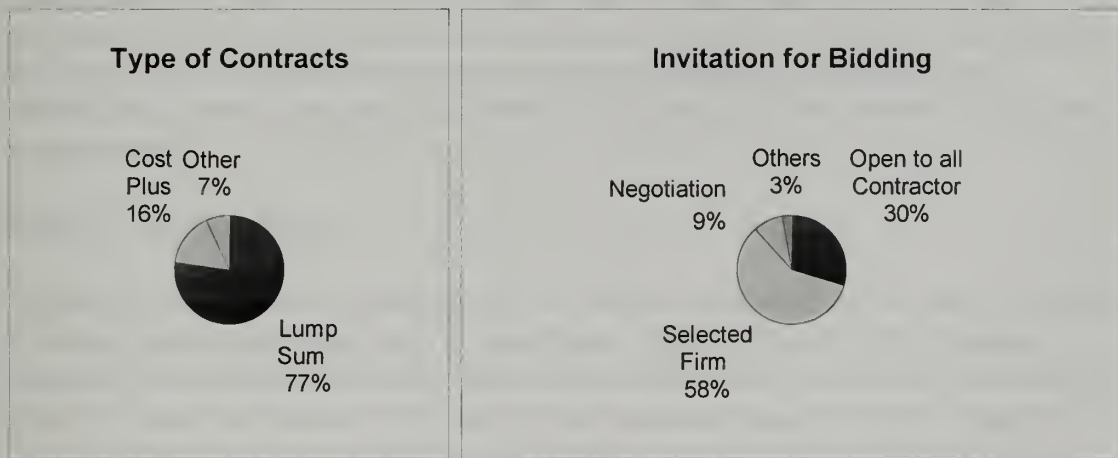
## CONTRACTING PROCEDURES

A series of questions were asked about the awarding of construction contracts (see Table 4). An average of 9.1 construction contracts per facility was expected to be awarded in 1997. As shown in Figure 8, the majority (77%) of respondents use a lump sum (fixed price) contracting method, while 16% of them use a cost plus method. Approximately 7% responded that they used other methods. Examples of the other methods were GMP (guaranteed maximum price) (13 respondents), design build (4 respondents), time and materials (2 respondents), and a GMP with shared savings.



Most construction contracts (82%) are competitively bid. For these competitively bid contracts, only 30 % of them are "open to all contractors", 58% are "restricted to selected firms on bidders list", 9% are based on "negotiations", and 3% are "others". Examples of "others" include set-aside contracts for the small business and the small business owned by the disadvantaged group. The total percentage of the above breakdown exceeds 100% because some respondents marked more than one answer.

To the question of how the cost of construction contracts were distributed among different contractors in monetary terms, 59% was awarded to general contractors, followed by subcontractors (specialty contractors) (22%), professional construction management (CM) (11%), design build (9%), and "others" (0.6%). Examples of "others" included architect/engineering design, in-house personnel, and purchase order.



**Figure 8: Breakdown of Contracting Methods**

## ANALYSIS BY FACILITY CHARACTERISTIC

The survey results were analyzed to see how the construction budgets, contracting procedures, facility maintenance, and other facility related matters were influenced by different variables such as the size of hospital (number of set-up beds), number of Intensive Care Facilities, age of facility, occupancy rate, public vs private facilities, and regional differences.

### Size of Facility

Responding hospitals were grouped into four different size categories, consistent with the 1989 study. Table 5 contains a tabulation of data with respect to these size categories. As one might expect, the total budgets of the hospitals and number of construction



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contracts to be awarded increased with the size of hospital (number of set-up beds). The larger hospitals also had higher occupancy rates. Other variables noted to be related to the size of hospital was the ownership of the hospital. Larger hospitals had a higher percentage of government ownership compared to smaller ones, although the overall average percentage of government ownership regardless of the size of hospital was only 28.3%.

Many variables, however, did not reveal a discernible pattern in relation to the size of hospital. Examples of the variables that were not related to the size of hospitals were the allocation of the funds to new construction, renovation, and maintenance, the nature of expenditures in terms of adding different spaces, the percentage of construction work performed by in-house personnel, problem areas for major maintenance or repair. This was also true for the type of construction contracts awarded (lump sum or cost plus), percentage of competitively bid contracts, bidding process, and distribution of construction contracts (general, subcontract, design build, or professional construction management).

### **Intensive Care Facilities**

Responding hospitals were grouped into five different categories on the basis of the ratio of intensive care/critical care beds to set-up beds. About 72% of 132 respondents accounted for the middle two categories of the ratio between 5% and 15% (see Table 6). It must be noted that intensive/critical care beds generally require a higher degree of focus on patient care, necessitating greater requirements for nursing care and patient monitoring. Hospitals with larger portions of intensive/critical care beds had higher total budgets for construction in 1995 through 1997. This is also true for the percentage of the construction work performed by in-house personnel and the occupancy rates.

Many variables, however, did not vary in a discernible pattern in relation to the portions of intensive/critical care beds. Some of the variables that were not related to the portions of intensive care/critical beds were the allocation of the funds to new construction, renovation, and maintenance, the nature of expenditures in terms of adding different spaces, problem areas and causes that had been the source of major maintenance or repair costs. This was also true for the type of construction contracts awarded (lump sum or cost plus), percentage of competitively bid contracts, bidding process, and distribution of construction contracts (general, subcontract, design build, or profession construction management).





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There were some notable differences between the results of this survey and the one performed in 1989. In the 1989 survey, it was noted that the hospitals with a larger percentage of intensive/critical care beds occur in slightly smaller, newer, and private hospitals, and that no significant differences were noted between hospitals when compared on the basis of occupancy rates. This survey, however, showed that the hospitals with a larger percentage of intensive/critical care beds occur in larger hospitals, and did not present any discernible pattern for the age of structures and private hospitals. These results underscore the fact that such relationships cannot be assumed to remain the same from year to year.

### **Facility Age**

The survey was analyzed by grouping into five different age categories (see Table 7). The most unique aspect occurred in the first age category, less than five years of age. The uniqueness within this period was somewhat consistent with the 1989 survey result. For the hospitals less than five years of age, construction expenditures in 1995 and 1996 are disproportionally high compared to the older hospitals. This is also true for the ratio of the intensive/critical care beds to set-up beds as well as the percentage of the construction work performed by in-house personnel. However, if only hospitals with more than five years of age were considered, the construction expenditures generally increased with the age of structures.

Some other variables were related to the age of hospital. For example, newer hospitals had more beds in private rooms, which was consistent with the trends of the health care industry. Although the survey results indicate a higher percentage of government ownership for the hospitals with less than five and more than 46 years of age, no clear pattern could be established over the different age categories. The newer hospitals also spent a higher percentage of funds in adding supporting spaces such as laboratory, pharmacy, radiology, etc.

Many variables, however, did not vary in a discernible pattern in relation to the age of hospitals. The allocation of the funds to new construction, renovation, and maintenance, the type of construction contracts awarded (lump sum or cost plus), percentage of competitively bid contracts, bidding process, and distribution of construction contracts (general, subcontract, design build, or professional construction management) were not related to the age of hospitals.

### **Occupancy Rate**

The occupancy rates are an indication of a hospital's activity. In this analysis, the hospitals were grouped into five different categories (see Table 8). The survey results





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indicated larger hospitals had generally higher occupancy rates. This was also true for hospitals with more intensive/critical beds and more private beds.

The occupancy rates were closely related to the construction expenditures in 1995 and 1996. The numbers indicate that the higher occupancy rates necessitated more expenditures in construction. The trend of the construction expenditures in 1997, however, was not as striking without clear reasons other than the fact that the 1997 expenditures were future estimates, not actual or reserved, for most respondents. The categories of higher occupancy rates represent higher proportions of government-owned hospitals. Lower health care cost and more widely available trauma units might have attracted more patients to government-owned hospitals.

In responding to a question of construction budgets for the next five years (1997 - 2001), a higher percentage of hospitals in lower occupancy rate categories responded their budgets are likely to "Increase Significantly" or "Decrease Significantly", while a higher percentage of hospitals in higher occupancy rate categories responded their budgets are likely to "Remain Roughly the Same". Hospitals with higher occupancy rates appear to be more likely to maintain their current budget level, while budgets for the hospitals with lower occupancy rates will likely be fluctuating.

Many variables, however, did not show a discernible pattern in relation to the occupancy rates. Some of the variables that were not related to the portions of occupancy rates were the distribution of the funds to new construction, renovation, and maintenance, the nature of expenditures in terms of adding different spaces, problem areas and causes that had been the source of major maintenance or repair costs. This was also true for the type of construction contracts awarded (lump sum or cost plus), percentage of competitively bid contracts, bidding process, and distribution of construction contracts (general, subcontract, design build, or professional construction management).

### **Public versus Private Facilities**

Responding hospitals were grouped into two different categories, public and private (see Table 9). Public hospitals, which account for 28% of all respondents, tend to be slightly larger and older facilities when compared to private hospitals. They also tend to have slightly higher occupancy rates as discussed in the previous section and a much lower number of admissions per year.

Construction expenditures and plans were examined for these two categories. It is notable that public hospitals compared to private hospitals spent more than twice as much in overall construction in 1995 and 1996, and were projected to spend slightly more in 1997. When hospitals were compared in terms of the budgets for the next five years, a



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greater portion of private hospitals responded that their budgets will "Increase Significantly", while more portions of public hospitals responded that their budget will be likely to "Decrease Significantly". The conclusion, thus, could be drawn from these trends that differences in budgets between public and private hospitals for the next five years or so will level out. It is of interest to note that the 1989 survey results showed the private hospitals spent slightly more per facility than the public hospitals.

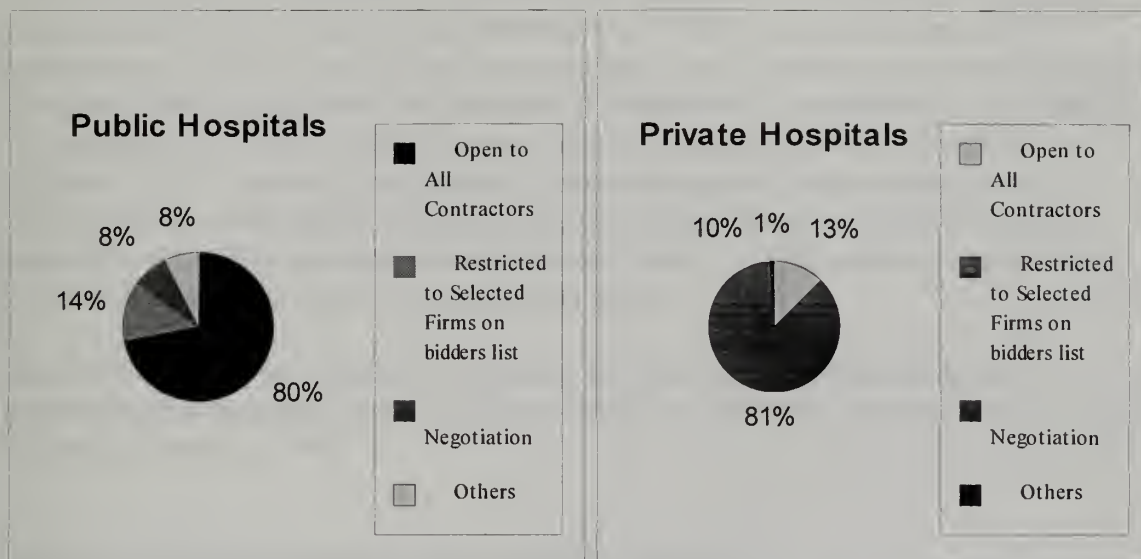
The allocation of funds to new construction, maintenance/repairs, and renovation was examined for public and private hospitals. There was a discernible pattern in allocating construction funds. The public hospitals allocated a higher percentage of funds in maintenance and repairs compared to private hospitals, while the private hospitals allocated a higher percentage of funds to renovation and remodeling. This may have to do with the average age of the public hospitals being greater than that of the private hospitals. Older facilities would naturally require more work in maintenance and repairs than newer ones. The survey results also revealed the public hospitals allocated more funds for the construction work performed by in-house personnel, compared to the private hospitals.

As expected, some significant differences were noted in contracting practices between public and private hospitals. A total of 93% of all contracts awarded for the public hospitals was the lump sum type contract, compared to 78% for the private hospitals. Only a total of 6% of contracts awarded for the public hospitals was the cost plus type contract, compared to 20% for the private hospitals. The private hospitals also utilize some (10%) other types of contract such as time and materials and guaranteed maximum price (GMP).

To a question of how the costs of construction contracts are distributed, the public hospitals awarded a majority (79%) of their contracts to general contractors and 19% to the specialty contractors, while the private hospitals awarded considerably less (51%) for general contractors and more (23%) for specialty subcontractors. Another notable fact was the private hospitals used design build and professional construction management (CM) contracts in 9.3% and 15% of overall contract awards, respectively, while the public hospitals utilized these types of contract for only 1.9% and 0.2%, respectively.

Figure 9 shows clear differences between public and private facilities on how contractors are invited to submit bids. Most public hospitals (80%) responded "open to all public", while this was the case for only 13% of private hospitals respondents. Most private hospitals (81%), however, used a bidding process that was "restricted to selected firms on bidders list", while this was the case for only 14% of the public hospitals.





**Figure 9: Breakdown of Bidding Methods between Public and Private Hospitals**  
(The total exceeds 100% because some respondents provided multiple marks)

The public and private hospitals do not appear to differ appreciably when compared on the basis of the source and cause of major maintenance and repairs.

### Regional Differences

Hospitals responding to this study were grouped into the same seven different geographic regions as for the 1989 study. (See Table 10 for details and page 2 for regional breakdown. Although it was generally difficult to note clear patterns on most variables, readers might be able to obtain information for specific variables on the interested regions from the table provided.

### CONSTRUCTION RELATED PROBLEMS

One of the questions in the survey was "What is your top construction related problem?" A total of 68% (118 of 173) of respondents provided an answer to the question. The most frequently cited problem was the timely completion of the projects (17 respondents). Among other answers provided were: meeting state and safety code requirements (13 respondents); interruption of the hospital operation (10 respondents); lack of competent contractors (10 respondents); high construction cost and cost control after the contract award (10 respondents); poor, inflexible, and incomplete design (15 respondents);





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punchlist and contract close-out (5 respondents); impact of change orders (4 respondents); lack of quality CM (construction manager) and PM (project manager) (3 respondents); lack of funds (3 respondents); lack of planning including site visit (2 respondents); material availability (2 respondents); low bid selection contracting practice (2 respondents); compliance with the contract documents (2 respondents); and warranty (2 respondents). Problems that were mentioned as inherent to the hospital facilities included: HVAC system (4 respondents); asbestos removal (2 respondents); roof replacement (2 respondents); facility modernization; replacement of aging plant; and exterior walls. Other problems mentioned were: lack of coordination between projects; relocation of existing units; and construction safety.

Most of the items addressed above appear to be typical problems related to the construction of hospitals, as the similar problems had also been addressed in the previous survey performed in 1989.

## **FUTURE TRENDS IMPACTING CONSTRUCTION**

The last question asked in the survey was "What trends relating to construction, if any, do you see impacting facility construction over the next 5- 10 years?" A total of 63% (109 of 173) of respondents provided an answer to this question. The most frequently addressed future trend was the outpatient service emphasis (27 respondents) in the health care industry. This change in service philosophy also appeared to provide an influence on at least one major facility related area: More renovation/remodeling of the facility but less new construction (15 respondents) to accommodate outpatient service. Survey results revealed that the renovation/remodeling trend was also fueled by several other factors such as decreasing construction funds (9 respondents), merging of functions (1 respondents), emphasis on managed care (3 respondents), etc.

Changes in technology seemed to have a significant impact on the hospital construction industry. A total of 5 respondents said that new technology will require space modification to accommodate the changes. Systems for flexibility (7 respondents) and increasing demands for more cost effective practice (3 respondents) were also expected with less construction funds available in the future. A total of eight respondents said more stringent code requirements were anticipated for the future, of which three were related to the Americans with Disabilities Act (ADA).

More attention will be given to environmental concerns such as conversion to energy efficient systems (3 respondents) and additional seismic requirements (4 respondents). It is, however, interesting to note that not a single respondent addressed hazardous waste concerns, which was a complete turnaround from the 1989 survey. The 1989 survey





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received a total of 16 responses collectively for such environmental concerns as energy management, asbestos, and hazardous waste.

Several other significant changes were noted in the way construction services will be obtained. Seven respondents predicted more Design Build contracts will be used, while three mentioned CM service. Two responded that partnering between the owner and the contractor will be the way to manage projects. Three respondents expressed a concern over a shortage of qualified contractors and diminishing workmanship. Other trends noted were: anticipation of tighter QC practice; more hotel-like hospital settings; and emphasis on smaller and more custom projects.

Most of the items addressed above appear to be the same issues that had been mentioned in the previous survey performed in 1989.

## **CONCLUSIONS**

Construction budgets for the construction industry overall for the next five years are projected to remain at a steady level. Considering increasing construction costs, it appears considered that market opportunity for construction contractors for the hospital industry is not as bright as it was in the past. However, a few pointers out of these survey results could be utilized in seeking future business opportunities. There is a definite emphasis on renovation and remodeling over new construction due to several reasons such as change in operational philosophy, new technology accommodation, savings of funds, etc. This climate may represent a unique opportunity for some contractors to enter into long term contracts to provide construction services to hospitals that are undergoing rapid changes in facility needs. Such customer-supplier relationship are not unusual in industries where owners operate large facilities. Contractors also must be aware of the different methods being used to award the construction contracts. As it always has been, the public hospitals will more likely have a bidding process open to all interested parties, while private hospitals will use selected bidders lists more extensively. The public hospitals also will use the lump sum type of contract extensively, while the private hospitals are expected to mix other types such as cost plus and guaranteed maximum price contracts with the lump sum type of contract.



**Table 1**  
**General Description of Hospitals\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
Number of Licensed Beds	309	266	1032	42
Number of Set Up Beds	244	202	900	0
Number of Intensive/critical Care Rooms	25	16	200	0
Number of Private Rooms	93	54	759	0
Number of Semi-Private Rooms	110	76	911	0
Number of Wards	33	0	500	0
Occupancy Rate	66.3%	68.0%	100.0%	20.0%
Number of Admission per Year	8495	6400	50000	20
Age of the Primary Structure (Years)	30	30	130	1
Government Owned	28.3%			
Federal	42.9%			
State	24.5%			
County	28.6%			
City	4.1%			
Privately Owned	71.7%			

\*173 respondents



**Table 2**  
**Information on Hospital Construction Expenditure\***

<i>descriptor</i>	<i>mean**</i>	<i>median**</i>	<i>maximum**</i>	<i>minimum**</i>
Construction Expenditures in 1995	\$5,631	\$2,500	\$70,000	\$0
New Construction	28.9%			
Maintenance & Repair	18.9%			
Renovation/Remodeling	51.1%			
General Nature of Construction				
% Add Patient Room	10.9%			
% Add Administration Space	5.1%			
% Add Support Space (lab, pharmacy, etc)	23.1%			
% Add Operating Rooms	3.2%			
% Add Alzheimer's Ward	0.4%			
% Add Psychiatric Ward	2.9%			
% Others	53.0%			
Construction(excl. maint./repair) by In-House Personnel	\$487 (16.4%)	\$70 (5.0%)	\$10,000 (100%)	\$0 (0.0%)
Construction Expenditures projected for 1996	\$6,017	\$2,000	\$150,000	\$0
New Construction	25.4%	0.0%	100.0%	0.0%
Maintenance & Repair	23.4%	13.0%	100.0%	0.0%
Renovation/Remodeling	51.6%	50.0%	100.0%	0.0%
Construction Expenditures projected for 1997	\$5,622	\$3,000	\$71,500	\$0
New Construction	30.9%	0.0%	100.0%	0.0%
Maintenance & Repair	20.8%	10.0%	100.0%	0.0%
Renovation/Remodeling	48.0%	50.0%	100.0%	0.0%
Construction Budgets for the Next Five Years (1997-2001)				
Remain Roughly the Same	26.0%			
Increase Slightly	11.6%			
Increase Significantly	25.4%			
Decrease Slightly	18.5%			
Decrease Significantly	18.5%			
Amount of Construction that is Government Funded	20.4%	0.0%	100.0%	0.0%

\*173 respondents

\*\*\$ in thousands



**Table 3**  
**Information on Maintenance\*\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
<b>Source of Major Maintenance and/or Repair Costs, "1" being the worst problem area</b>				
Exterior Walls	7.6	8.0	13.0	1.0
Interior Walls	6.2	6.0	13.0	1.0
Security	7.6	8.0	13.0	1.0
Flooring	5.8	5.0	14.0	1.0
Electrical	5.1	4.5	12.0	1.0
Roof	3.9	3.0	13.0	1.0
Structure	9.7	11.0	14.0	1.0
Windows	7.0	7.0	13.0	1.0
Handicap Accessibility	6.9	7.0	13.0	1.0
Mechanical (HVAC)	2.4	2.0	9.0	1.0
Plumbing	4.1	4.0	13.0	1.0
Lighting	6.5	6.0	13.0	1.0
Conveyance (elevator)	6.7	6.0	13.0	1.0
Others	*5.4	*3.0	*14.0	*1.0
<b>Cause of Significant Maintenance and Repair Costs, "1" being the worst problem area</b>				
Federal, State, Local Laws	3.6	3.0	11.0	1.0
Materials (accelerated deterioration)	4.7	5.0	7.0	1.0
Construction (poor workmanship)	5.1	6.0	9.0	1.0
Normal Wear and Tear	3.0	3.0	7.0	1.0
Aging of Facility	1.7	1.0	6.0	1.0
Poor Design	3.8	3.0	8.0	1.0
Technology Replacement	3.0	3.0	7.0	1.0
Others	*6.3	*8.0	*8.0	*1.0

\* not an accurate representation due to either very limited number of or no respondent

\*\*173 respondents





**Table 4**  
**Information on Contracting\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
# of Construction Contracts to be Awarded in 1997	9.1	4.0	160.0	0.0
Type of Construction Contracts Awarded				
% Lump Sum (fixed price)	77.4%	100.0%		
% Cost Plus	15.8%	0.0%		
% Others	6.8%	0.0%		
Percentage of Contracts that are competitively Bid	81.9%	95.0%		
Invitation for Bidding				
Open to All Contractors	30.1%			
Restricted to Selected Firms on Bidders List	58.4%			
Negotiation	8.7%			
Others	2.7%			
Distribution of Contracts				
% General Contractor	59.4%	67.5%		
% Subcontractors (specialty contractors)	21.8%	10.0%		
% Design Build	7.1%	0.0%		
% Professional Construction Mgmnt (CM) Contract	10.9%	0.0%		
% Others	0.6%	0.0%		

\*173 respondents



**Table 5**

**Variable Impacted by Size (# of Setup Beds) of Hospital**

<i>Number of set-up beds</i>	<i>150-<sup>**</sup></i>	<i>150-250<sup>**</sup></i>	<i>250-350<sup>**</sup></i>	<i>350+<sup>**</sup></i>
Number of Hospitals	50	41	28	30
<b>Information about Hospital</b>				
Avg. Number of Licensed Beds	159.9	260.9	362.0	609.1
Avg. Number of Set Up Beds	99.8	196.6	299.6	502.1
Avg. Occupancy Rate	58.1%	69.5%	68.4%	73.7%
Avg. Number of Admission per Year	5,153	7,370	10,882	16,196
Avg. Age of the Primary Structure (Years)	30.1	25.6	28.5	32.5
Privately Owned	80.0%	73.2%	67.9%	63.3%
Government Owned	20.0%	26.8%	32.1%	36.7%
Federal	30.0%	45.5%	55.6%	45.5%
State	10.0%	18.2%	22.2%	36.4%
County	50.0%	36.4%	11.1%	18.2%
City	10.0%	0.0%	11.1%	0.0%
<b>Construction Plans for the Hospital</b>				
Construction Expenditures in 1995	\$2,639	\$5,885	\$8,435	\$8,081
New Construction	38.9%	26.3%	26.1%	17.8%
Maintenance & Repair	18.6%	17.2%	15.8%	18.3%
Renovation/Remodeling	40.1%	54.7%	58.1%	63.9%
General Nature of Construction				
% Add Patient Room	12.3%	12.4%	7.9%	11.1%
% Add Administration Space	4.1%	5.5%	5.9%	8.0%
% Add Support Space (lab, pharmacy, etc)	17.0%	18.4%	32.9%	29.1%
% Add Operating Rooms	3.2%	2.3%	1.0%	3.7%
% Add Alzheimer's Ward	0.5%	0.0%	0.0%	0.0%
% Add Psychiatric Ward	0.2%	3.3%	6.5%	4.6%
% Others	62.7%	55.1%	41.6%	44.0%
Construction(excl. maint./repair) by In-House Personnel	\$112	\$236	\$1,012	\$953
	(13.5%)	(17.0%)	(16.1%)	(17.5%)
Construction Expenditures projected for 1996	\$2,930	\$4,850	\$10,141	\$8,842
New Construction	27.6%	25.9%	30.5%	20.4%
Maintenance & Repair	24.9%	23.2%	16.2%	18.6%
Renovation/Remodeling	47.5%	50.5%	53.4%	64.1%
Construction Expenditures projected for 1997	\$3,018	\$6,464	\$8,443	\$9,043
New Construction	32.1%	40.4%	42.2%	23.5%
Maintenance & Repair	17.6%	19.9%	18.5%	16.8%
Renovation/Remodeling	49.3%	39.3%	39.0%	59.7%
Construction Budgets for the Next Five Years (1997-2001)				
Remain Roughly the Same	24.0%	26.8%	17.9%	36.7%
Increase Slightly	8.0%	7.3%	14.3%	13.3%
Increase Significantly	38.0%	26.8%	10.7%	16.7%
Decrease Slightly	8.0%	19.5%	32.1%	33.3%
Decrease Significantly	22.0%	17.1%	25.0%	3.3%
% of Construction that is Government Funded	14.6%	18.1%	19.6%	19.3%

<sup>\*\*</sup>Category range includes the lower-end integer.

\$ in thousands



Table 5 (Continued)

**Variable Impacted by Size (# of Setup Beds) of Hospital**

(\$ in thousands)

<i>Number of set-up beds</i>	<i>150-<sup>**</sup></i>	<i>150-250<sup>**</sup></i>	<i>250-350<sup>**</sup></i>	<i>350+<sup>**</sup></i>
<b>Information on Maintenance</b>				
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area				
Exterior Walls	7.8	7.6	7.8	8.3
Interior Walls	6.4	6.3	5.8	5.6
Security	7.9	7.5	5.4	8.2
Flooring	5.7	5.1	5.6	6.3
Electrical	6.5	4.7	5.7	3.9
Roof	4.8	4.8	2.8	3.2
Structure	10.1	8.8	10.4	9.8
Windows	7.1	6.9	7.5	6.2
Handicap Accessibility	7.2	6.6	5.9	6.7
Mechanical (HVAC)	2.2	1.8	3.3	2.4
Plumbing	4.4	3.4	4.4	4.1
Lighting	5.9	6.6	7.4	6.4
Conveyance (elevator)	7.3	7.4	5.2	6.3
Others	*5.0	*4.5	*1.0	*9.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area				
Federal, State, Local Laws	3.6	3.0	3.7	3.2
Materials (accelerated deterioration)	4.9	4.1	4.7	5.2
Construction (poor workmanship)	5.3	5.3	5.0	5.2
Normal Wear and Tear	2.9	3.0	3.0	2.9
Aging of Facility	1.9	1.6	1.7	1.5
Poor Design	3.5	3.8	3.8	4.8
Technology Replacement	3.1	2.8	2.7	3.6
Others	*8.0	*6.3	*1.0	*0.0
<b>Information on Construction Contracts</b>				
# of Construction Contracts to be Awarded in 1997	4.3	6.4	12.8	19.4
Type of Construction Contracts Awarded				
% Lump Sum (fixed price)	74.4%	75.5%	77.0%	76.5%
% Cost Plus	13.5%	19.4%	17.7%	19.5%
% Others	12.1%	5.0%	5.4%	4.0%
Percentage of Contracts that are competitively Bid	85.0%	76.5%	73.0%	82.3%
Invitation for bidding				
Open to All Contractors	24.0%	29.3%	32.1%	40.0%
Restricted to Selected Firms on Bidders List	66.0%	61.0%	64.3%	56.7%
Negotiation	10.0%	12.2%	17.9%	3.3%
Others	2.0%	2.4%	0.0%	6.7%
Distribution of Contracts				
% General Contractor	63.0%	59.9%	57.1%	52.9%
% Subcontractors (specialty contractors)	14.5%	24.9%	21.5%	27.5%
% Design Build	8.4%	2.7%	7.6%	13.7%
% Professional Construction Management (CM)	12.2%	8.8%	13.8%	5.4%
% Others	0.4%	1.3%	0.0%	0.5%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.





**Table 6**

**Variable Impacted by % Intensive Care Beds of Hospital**

<i>% of Intensive Care Beds</i>	<i>0-5**</i>	<i>5-10**</i>	<i>10-15**</i>	<i>15-20**</i>	<i>20+**</i>
Number of Hospitals	19	66	30	9	8
<b>Information about Hospital</b>					
Avg. Number of Licensed Beds	270.1	280.9	331.0	437.9	483.9
Avg. Number of Set Up Beds	250.6	223.6	250.7	320.4	333.9
Avg # of Intensive/critical Care Rooms	7.6	16.6	30.1	59.0	100.5
Avg % of Intensive/critical Care Rooms	3.1%	7.5%	12.0%	18.1%	47.9%
Avg. Occupancy Rate	60.1%	64.1%	66.2%	70.7%	70.5%
Avg. Number of Admission per Year	3249	9295	10456	8780	11948
Avg. Age of the Primary Structure	29.8	29.3	27.6	31.4	29.9
Privately Owned	57.9%	75.8%	70.0%	88.9%	75.0%
Government Owned	42.1%	24.2%	30.0%	11.1%	25.0%
Federal	50.0%	37.5%	66.7%	100.0%	50.0%
State	25.0%	12.5%	0.0%	0.0%	50.0%
County	25.0%	43.8%	22.2%	0.0%	0.0%
City	0.0%	6.3%	11.1%	0.0%	0.0%
<b>Construction Plan for the Hospital</b>					
Construction Expenditures in 1995	\$3,745	\$4,272	\$6,520	\$8,294	\$7,675
New Construction	40.6%	27.7%	35.0%	15.6%	13.3%
Maintenance & Repair	20.8%	15.1%	17.8%	13.3%	12.8%
Renovation/Remodeling	38.6%	55.5%	47.2%	71.1%	74.0%
General nature of Construction					
% Add Patient Room	9.4%	10.6%	10.2%	6.1%	18.6%
% Add Administration Space	3.8%	2.5%	9.8%	3.3%	6.3%
% Add Support Space (lab, pharmacy, etc)	26.8%	19.0%	32.5%	17.8%	20.0%
% Add Operating Rooms	6.8%	1.9%	2.5%	3.9%	0.0%
% Add Alzheimer's Ward	0.0%	0.3%	0.0%	0.0%	0.0%
% Add Psychiatric Ward	7.9%	0.6%	1.0%	5.6%	10.0%
% Others	39.7%	62.8%	43.3%	63.9%	45.1%
Construction by In-House Personnel	\$224	\$318	\$574	\$2,068	\$213
	(10.3%)	(14.8%)	(17.7%)	(20.3%)	(10.3%)
Construction Expenditures projected for 1996	\$2,655	\$4,459	\$5,367	\$10,153	\$8,349
New Construction	26.9%	24.5%	28.7%	37.2%	23.8%
Maintenance & Repair	23.3%	20.7%	28.1%	15.0%	21.0%
Renovation/Remodeling	49.8%	54.8%	46.5%	47.8%	55.3%
Construction Expenditures projected for 1997	\$2,811	\$6,449	\$6,928	\$9,961	\$7,290
New Construction	22.0%	39.1%	38.4%	26.1%	33.1%
Maintenance & Repair	26.6%	16.7%	15.7%	20.6%	29.7%
Renovation/Remodeling	51.5%	43.4%	45.7%	53.3%	37.2%
<b>Construction Budget for the Next Five Years (1997-2001)</b>					
Remain Roughly the Same	31.6%	28.8%	16.7%	22.2%	12.5%
Increase Slightly	0.0%	12.1%	6.7%	33.3%	25.0%
Increase Significantly	26.3%	28.8%	33.3%	11.1%	0.0%
Decrease Slightly	31.6%	13.6%	16.7%	11.1%	37.5%
Decrease Significantly	10.5%	19.7%	26.7%	11.1%	12.5%
% of Construction that is Government Funded	25.6%	15.9%	6.9%	0.0%	22.5%

\$ in thousands

\*\*Category range includes the lower-end integer.





**Table 6 (Continued)****Variable Impacted by % Intensive Care Beds of Hospital**

<b>% of Intensive Care Beds</b>	<b>0-5**</b>	<b>5-10**</b>	<b>10-15**</b>	<b>15-20**</b>	<b>20+**</b>
<b>Information on Maintenance</b>					
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area					
Exterior Walls	9.1	7.7	7.7	8.0	8.3
Interior Walls	5.8	6.5	6.6	4.7	5.2
Security	3.9	8.2	8.1	5.0	5.3
Flooring	5.6	5.8	5.2	4.5	5.5
Electrical	6.3	5.1	5.4	6.2	4.2
Roof	4.1	4.1	3.2	4.5	6.5
Structure	10.6	9.9	9.6	10.3	7.5
Windows	7.6	7.3	7.1	8.0	4.7
Handicap Accessibility	6.8	6.4	6.9	5.9	7.0
Mechanical (HVAC)	2.3	2.1	2.5	2.4	2.3
Plumbing	3.5	4.0	4.2	5.7	4.0
Lighting	6.2	6.3	6.6	5.7	8.3
Conveyance (elevator)	7.8	6.9	6.0	3.7	6.7
Others	*1.0	*6.4	*3.0	*0.0	*0.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area					
Federal, State, Local Laws	3.1	3.2	3.5	2.6	5.4
Materials (accelerated deterioration)	4.5	5.2	4.1	5.3	4.8
Construction (poor workmanship)	5.5	5.3	5.2	5.3	6.7
Normal Wear and Tear	3.0	3.0	2.7	2.1	2.6
Aging of Facility	1.6	1.8	1.6	2.2	1.4
Poor Design	4.3	3.9	4.0	4.8	3.0
Technology Replacement	2.8	2.6	3.2	2.8	2.9
Others	*1.0	*5.5	*0.0	*0.0	*8.0
<b>Information on Construction Contracts</b>					
# Construction Contracts to be awarded in 1997	6.1	6.9	16.5	14.2	8.3
Type of Construction Contracts Awarded					
% Lump Sum (fixed price)	64.9%	71.9%	81.0%	85.0%	91.3%
% Cost Plus	30.4%	16.4%	16.2%	7.5%	8.8%
% Others	4.6%	11.7%	2.8%	6.3%	0.0%
% of Contracts that are competitively Bid	75.3%	80.4%	77.1%	65.6%	93.4%
Invitation for Bidding					
Open to All Contractors	42.1%	27.3%	33.3%	11.1%	12.5%
Restricted to Selected Firms on Bidders List	47.4%	66.7%	56.7%	88.9%	62.5%
Negotiation	10.5%	12.1%	10.0%	11.1%	12.5%
Others	5.3%	0.0%	3.3%	11.1%	12.5%
Distribution of Contracts					
% General Contractor	71.3%	57.3%	61.1%	29.0%	51.4%
% Subcontractors (specialty contractors)	20.4%	18.7%	25.1%	44.1%	21.4%
% Design Build	5.2%	7.7%	2.0%	25.5%	12.9%
% Professional Construction Mgmnt (CM)	1.6%	15.3%	10.1%	1.4%	14.3%
% Others	2.8%	0.6%	0.0%	0.0%	0.0%

\* not an accurate representation due to either limited number of or no respondent

\*\*Category range includes the lower-end integer.

\$ in thousands



**Table 7**  
**Variable Impacted by Age of Structure**

<i>Age of Primary Structure</i>	<i>0-5**</i>	<i>5-15**</i>	<i>15-25**</i>	<i>25-35**</i>	<i>35-45**</i>	<i>45+**</i>
Number of Hospitals	10	16	46	43	34	21
<b>Information about Hospital</b>						
Avg. Number of Licensed Beds	338.8	271.8	295.6	305.2	321.6	335.5
Avg. Number of Set Up Beds	309.8	225.1	237.1	222.6	273.7	220.7
Avg. Occupancy Rate	75.7%	62.5%	63.3%	63.2%	68.8%	72.1%
Avg. Number of Admission per Year	10,812	6,343	8,943	7,369	9,065	6,688
Avg. Age of the Primary Structure	2.5	10.8	21.3	30.2	40.9	61.0
Privately Owned	40.0%	81.3%	84.8%	72.1%	73.5%	47.6%
Government Owned	60.0%	18.8%	15.2%	27.9%	26.5%	52.4%
Federal	33.3%	6.3%	42.9%	41.7%	33.3%	63.6%
State	50.0%	0.0%	28.6%	16.7%	22.2%	18.2%
County	16.7%	6.3%	14.3%	41.7%	44.4%	18.2%
City	0.0%	6.3%	14.3%	0.0%	0.0%	0.0%
<b>Construction Plan for the Hospital</b>						
Construction Expenditures in 1995	\$18,035	\$2,462	\$3,651	\$5,172	\$5,752	\$7,569
New Construction	37.0%	37.2%	23.1%	35.7%	24.4%	20.0%
Maintenance & Repair	31.0%	13.1%	17.3%	20.2%	11.7%	32.9%
Renovation/Remodeling	32.0%	49.7%	57.3%	44.3%	63.9%	43.1%
General nature of Construction						
% Add Patient Room	12.4%	3.3%	12.3%	9.0%	14.4%	12.7%
% Add Administration Space	0.9%	9.0%	4.4%	3.5%	6.5%	6.3%
% Add Support Space (lab, pharmacy, etc)	40.4%	28.3%	28.2%	23.4%	15.5%	14.7%
% Add Operating Rooms	0.0%	4.0%	3.0%	4.7%	3.2%	1.7%
% Add Alzheimer's Ward	0.0%	1.3%	0.2%	0.0%	0.0%	1.7%
% Add Psychiatric Ward	11.9%	0.7%	3.1%	1.3%	4.2%	1.7%
% Others	34.5%	53.3%	48.8%	54.6%	52.6%	61.2%
Construction by In-House Personnel	\$192	\$219	\$204	\$434	\$812	\$1,066
	(43.4%)	(17.4%)	(14.1%)	(10.5%)	(17.7%)	(18.6%)
Construction Expenditures projected for 1996	\$17,860	\$2,585	\$4,085	\$3,656	\$7,602	\$9,303
New Construction	14.4%	30.4%	18.4%	23.5%	33.8%	31.9%
Maintenance & Repair	24.4%	28.2%	21.2%	25.2%	19.0%	30.7%
Renovation/Remodeling	61.1%	41.4%	62.5%	51.3%	47.3%	36.7%
Construction Expenditures projected for 1997	\$2,525	\$10,718	\$3,546	\$5,220	\$7,957	\$5,575
New Construction	16.1%	43.3%	24.8%	31.9%	32.5%	38.0%
Maintenance & Repair	40.0%	16.4%	20.2%	23.5%	15.5%	20.5%
Renovation/Remodeling	43.9%	37.1%	55.5%	44.4%	52.0%	40.5%
<b>Construction Budget for the Next Five Years (1997-2001)</b>						
Remain Roughly the Same	30.0%	25.0%	28.3%	20.9%	26.5%	28.6%
Increase Slightly	10.0%	6.3%	10.9%	11.6%	14.7%	14.3%
Increase Significantly	20.0%	37.5%	23.9%	32.6%	20.6%	14.3%
Decrease Slightly	20.0%	12.5%	19.6%	16.3%	17.6%	28.6%
Decrease Significantly	20.0%	18.8%	19.6%	20.9%	17.6%	9.5%
% of Construction that is Government Funded	50.0%	13.6%	13.8%	12.0%	20.0%	40.7%

\*\*Category range includes the lower-end integer.

\$ in thousands





**Table 7 (Continued)**  
**Variable Impacted by Age of Structure**

<i>Age of Primary Structure</i>	<i>0-5**</i>	<i>5-15**</i>	<i>15-25**</i>	<i>25-35**</i>	<i>35-45**</i>	<i>45+**</i>
<b>Information on Maintenance</b>						
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area						
Exterior Walls	8.5	5.7	7.3	7.5	8.2	8.7
Interior Walls	4.0	7.5	5.8	6.9	5.0	8.3
Security	3.7	8.8	8.3	6.5	8.3	8.9
Flooring	5.7	5.7	5.3	5.5	5.6	7.5
Electrical	3.8	5.4	6.2	4.9	4.6	4.9
Roof	4.2	3.5	4.4	3.9	3.2	4.2
Structure	8.8	4.5	10.2	10.2	9.9	9.5
Windows	7.3	7.4	7.0	6.8	7.0	7.4
Handicap Accessibility	7.3	4.6	7.1	6.4	7.1	8.3
Mechanical (HVAC)	2.7	2.6	2.8	2.3	1.7	2.3
Plumbing	3.1	4.3	4.6	5.0	4.0	2.7
Lighting	6.5	5.0	7.1	6.1	6.0	6.9
Conveyance (elevator)	11.0	6.8	6.8	6.9	6.0	5.6
Others	*5.5	*4.0	*4.5	*7.5	*3.3	*9.0
Cause of Significant maintenance and Repair C						
Federal, State, Local Laws	2.2	3.2	3.4	3.7	3.4	4.3
Materials (accelerated deterioration)	5.5	3.0	4.7	5.0	4.7	4.6
Construction (poor workmanship)	4.2	3.1	5.4	5.2	5.6	5.3
Normal Wear and Tear	4.0	2.0	3.2	3.1	2.5	3.1
Aging of Facility	1.6	2.0	2.0	1.7	1.6	1.3
Poor Design	2.2	2.8	3.8	4.2	3.3	4.5
Technology Replacement	2.8	2.9	3.2	2.9	3.0	2.8
Others	*0.0	*0.0	*3.0	*6.3	*8.0	*8.0
<b>Information on Construction Contracts</b>						
# Construction Contracts to be awarded, 1997	7.0	14.1	7.3	8.3	9.8	11.4
Type of Construction Contracts Awarded	79.0%	86.1%	75.1%	80.4%	68.9%	84.8%
% Lump Sum (fixed price)	13.5%	10.4%	13.5%	13.8%	23.2%	15.0%
% Cost Plus	7.5%	3.6%	11.7%	5.9%	7.6%	0.2%
% Others						
% of Contracts that are competitively Bid	91.4%	80.2%	80.6%	77.5%	83.0%	90.0%
Invitation for Bidding						
Open to All Contractors	70.0%	31.3%	17.4%	32.6%	26.5%	52.4%
Restricted to Selected Firms on bidders list	30.0%	56.3%	71.7%	60.5%	70.6%	47.6%
Negotiation	10.0%	12.5%	10.9%	7.0%	5.9%	9.5%
Others	0.0%	0.0%	0.0%	2.3%	5.9%	9.5%
Distribution of Contracts						
% General Contractor	73.6%	62.7%	64.4%	54.0%	51.6%	67.3%
% Subcontractors (specialty contractors)	13.6%	18.5%	17.2%	26.1%	24.8%	19.1%
% Design Build	12.9%	2.8%	5.1%	14.8%	4.2%	2.9%
% Professional Construction Mgmt (CM)	0.0%	5.0%	12.6%	4.3%	21.9%	10.2%
% Others	0.0%	0.0%	0.1%	1.8%	0.0%	0.8%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.

\$ in thousands





**Table 8**  
**Variable Impacted by Occupancy Rate**

<i>% Occupancy Rate</i>	<i>50-<sup>**</sup></i>	<i>50-65<sup>**</sup></i>	<i>65-80<sup>**</sup></i>	<i>80-95<sup>**</sup></i>	<i>95+<sup>**</sup></i>
Number of Hospitals	20	46	51	31	9
<b>Information about Hospital</b>					
Avg. Number of Licensed Beds	206.6	256.0	343.4	348.4	285.4
Avg. Number of Set Up Beds	143.7	201.5	285.6	277.4	223.8
Avg. Occupancy Rate	37.2%	55.5%	70.8%	84.8%	97.2%
Avg. Number of Admission per Year	4,800	8,842	10,823	6,032	5,670
Avg. Age of the Primary Structure	32.8	25.4	31.3	29.4	48.4
Privately Owned	75.0%	76.1%	72.5%	64.5%	55.6%
Government Owned	25.0%	23.9%	27.5%	35.5%	44.4%
Federal	20.0%	36.4%	64.3%	45.5%	0.0%
State	0.0%	9.1%	21.4%	45.5%	75.0%
County	60.0%	45.5%	14.3%	9.1%	25.0%
City	20.0%	9.1%	0.0%	0.0%	0.0%
<b>Construction Plan for the Hospital</b>					
Construction Expenditures in 1995	\$1,863	\$4,939	\$5,276	\$7,420	\$8,758
New Construction	22.2%	37.0%	27.7%	21.6%	24.5%
Maintenance & Repair	25.0%	16.1%	14.6%	25.2%	23.9%
Renovation/Remodeling	48.4%	44.8%	57.5%	53.0%	51.6%
General nature of Construction					
% Add Patient Room	3.6%	15.4%	10.7%	13.7%	5.7%
% Add Administration Space	0.0%	2.9%	7.6%	6.7%	2.9%
% Add Support Space (lab, pharmacy, etc)	16.8%	32.6%	20.3%	19.4%	15.7%
% Add Operating Rooms	1.8%	2.8%	5.1%	1.7%	0.0%
% Add Alzheimer's Ward	1.4%	0.0%	0.2%	0.0%	4.3%
% Add Psychiatric Ward	1.8%	0.4%	1.9%	6.3%	13.6%
% Others	68.6%	44.0%	53.1%	52.3%	57.9%
Construction by In-House Personnel	\$133	\$226	\$709	\$604	\$481
	(10.8%)	(17.4%)	(16.1%)	(22.2%)	(15.9%)
Construction Expenditures projected for 1996	\$3,809	\$3,937	\$4,568	\$10,583	\$5,678
New Construction	16.4%	29.4%	27.0%	23.7%	17.8%
Maintenance & Repair	35.4%	20.8%	20.1%	27.5%	23.7%
Renovation/Remodeling	47.3%	51.8%	52.9%	48.8%	58.6%
Construction Expenditures projected for 1997	\$3,217	\$6,329	\$5,649	\$5,922	\$3,914
New Construction	25.4%	42.7%	30.3%	24.4%	12.5%
Maintenance & Repair	21.2%	16.8%	18.9%	27.8%	27.5%
Renovation/Remodeling	51.1%	40.2%	50.7%	47.7%	60.0%
Construction Budget for the Next Five Years (1997-2001)					
Remain Roughly the Same	15.0%	23.9%	25.5%	38.7%	44.4%
Increase Slightly	10.0%	13.0%	9.8%	3.2%	44.4%
Increase Significantly	30.0%	28.3%	21.6%	19.4%	0.0%
Decrease Slightly	15.0%	13.0%	21.6%	29.0%	11.1%
Decrease Significantly	25.0%	21.7%	19.6%	16.1%	0.0%
% of Construction that is Government Funded	5.8%	19.4%	17.4%	27.6%	45.6%
\$ in thousands					

<sup>\*\*</sup>Category range includes the lower-end integer.



**Table 8 (Continued)**

**Variable Impacted by Occupancy Rate**

<b>% Occupancy Rate</b>	<b>50-<sup>**</sup></b>	<b>50-65<sup>**</sup></b>	<b>65-80<sup>**</sup></b>	<b>80-95<sup>**</sup></b>	<b>95+<sup>**</sup></b>
<b>Information on Maintenance</b>					
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area					
Exterior Walls	8.2	8.7	7.3	5.9	8.2
Interior Walls	5.0	5.6	6.6	6.8	8.5
Security	7.4	7.3	8.4	6.9	6.3
Flooring	5.4	4.6	6.8	6.8	5.6
Electrical	6.2	5.2	5.2	4.5	5.0
Roof	3.9	3.8	3.5	4.1	6.8
Structure	10.5	9.4	9.9	10.7	7.5
Windows	6.6	8.3	6.8	5.9	5.0
Handicap Accessibility	7.9	7.0	6.8	7.0	5.2
Mechanical (HVAC)	1.6	2.6	2.4	2.8	1.9
Plumbing	4.6	3.5	4.1	4.8	3.9
Lighting	6.8	6.3	6.7	6.5	6.7
Conveyance (elevator)	6.3	8.0	5.4	6.6	7.8
Others	*1.0	*8.3	*4.0	*4.0	*2.0
Cause of Significant maintenance and Repair Costs,					
Federal, State, Local Laws	3.3	2.9	4.1	3.7	2.6
Materials (accelerated deterioration)	4.4	5.0	4.7	4.7	4.0
Construction (poor workmanship)	5.9	5.3	5.0	4.5	5.0
Normal Wear and Tear	2.4	2.9	2.7	3.7	2.3
Aging of Facility	1.9	1.5	1.9	1.6	1.7
Poor Design	3.7	4.0	3.5	3.5	4.0
Technology Replacement	2.6	3.1	3.2	3.3	3.0
Others	*0.0	*8.0	*8.0	*4.5	*8.0
<b>Information on Construction Contracts</b>					
# Construction Contracts to be awarded, 1997	5.9	5.0	10.8	11.0	9.4
Type of Construction Contracts Awarded					
% Lump Sum (fixed price)	80.7%	74.9%	76.8%	78.8%	76.7%
% Cost Plus	13.3%	16.0%	16.7%	16.2%	11.7%
% Others	5.9%	9.1%	6.4%	5.0%	11.7%
% of Contracts that are competitively Bid	94.8%	83.6%	77.7%	83.6%	81.7%
Invitation for Bidding					
Open to All Contractors	35.0%	30.4%	29.4%	35.5%	33.3%
Restricted to Selected Firms on bidders list	65.0%	56.5%	66.7%	64.5%	44.4%
Negotiation	5.0%	8.7%	13.7%	6.5%	11.1%
Others	5.0%	0.0%	3.9%	0.0%	11.1%
Distribution of Contracts					
% General Contractor	55.6%	61.0%	61.5%	54.8%	65.0%
% Subcontractors (specialty contractors)	15.5%	22.2%	23.3%	23.7%	18.8%
% Design Build	11.4%	5.7%	6.2%	4.3%	8.8%
% Professional Construction Mgmt (CM)	16.9%	11.4%	9.6%	12.2%	7.5%
% Others	1.9%	0.9%	0.5%	0.0%	0.0%

\* not an accurate representation due to either very limited number of no respondent

\*\*Category range includes the lower-end integer.



**Table 9****Difference between Public and Private Hospitals**

<i>descriptor</i>	<i>Public</i>	<i>Private</i>
Number of Hospitals	49	124
<b>Information about Hospital</b>		
Avg. Number of Licensed Beds	339.9	298.2
Avg. Number of Set Up Beds	268.8	234.9
Avg. Occupancy Rate	70.2%	64.8%
Avg. Number of Admission per Year	6,791	9,084
Avg. Age of the Primary Structure	34.2	28.7
Privately Owned	0.0%	100.0%
Government Owned	100.0%	0.0%
Federal	42.9%	0.0%
State	24.5%	0.0%
County	28.6%	0.0%
City	4.1%	0.0%
<b>Construction Plan for the Hospital</b>		
Construction Expenditures in 1995	\$8,755	\$4,392
New Construction	35.9%	26.1%
Maintenance & Repair	28.1%	15.2%
Renovation/Remodeling	36.0%	57.0%
General nature of Construction		
% Add Patient Room	4.3%	13.4%
% Add Administration Space	6.9%	4.4%
% Add Support Space (lab, pharmacy, etc)	20.1%	24.2%
% Add Operating Rooms	1.9%	3.6%
% Add Alzheimer's Ward	0.5%	0.4%
% Add Psychiatric Ward	7.6%	1.2%
% Others	58.7%	50.8%
Construction by In-House Personnel	\$713	\$400
	(19.1%)	(15.4%)
Construction Expenditures projected for 1996	\$10,729	\$4,077
New Construction	24.9%	25.6%
Maintenance & Repair	30.0%	20.7%
Renovation/Remodeling	45.1%	54.3%
Construction Expenditures projected for 1997	\$6,736	\$5,195
New Construction	26.0%	32.8%
Maintenance & Repair	32.8%	16.1%
Renovation/Remodeling	40.5%	50.9%
Construction Budget for the Next Five Years (1997-2001)		
Remain Roughly the Same	26.5%	25.8%
Increase Slightly	10.2%	12.1%
Increase Significantly	18.4%	28.2%
Decrease Slightly	18.4%	18.5%
Decrease Significantly	28.6%	14.5%
% of Construction that is Government Funded	48.7%	8.9%

\$ in thousands





**Table 9 (Continued)****Difference between Public and Private Hospitals**

<i>descriptor</i>	<i>Public</i>	<i>Private</i>
Number of Hospitals	49	124
<b>Information on Maintenance</b>		
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area		
Exterior Walls	8.8	7.2
Interior Walls	6.8	6.0
Security	7.1	7.9
Flooring	6.2	5.6
Electrical	3.9	5.8
Roof	4.2	3.7
Structure	8.5	10.2
Windows	7.3	6.9
Handicap Accessibility	7.4	6.7
Mechanical (HVAC)	2.4	2.4
Plumbing	3.7	4.4
Lighting	6.1	6.6
Conveyance (elevator)	6.4	6.8
Others	7.8	4.5
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area		
Federal, State, Local Laws	3.9	3.4
Materials (accelerated deterioration)	4.8	4.6
Construction (poor workmanship)	5.0	5.1
Normal Wear and Tear	3.0	2.9
Aging of Facility	1.4	1.9
Poor Design	3.9	3.7
Technology Replacement	3.1	3.0
Others	5.7	6.8
<b>Information on Construction Contracts</b>		
# Construction Contracts to be awarded, 1997	10.6	8.5
Type of Construction Contracts Awarded		
% Lump Sum (fixed price)	93.5%	70.8%
% Cost Plus	5.6%	19.9%
% Others	0.8%	9.3%
% of Contracts that are competitively Bid	92.7%	77.5%
Invitation for Bidding		
Open to All Contractors	79.6%	12.9%
Restricted to Selected Firms on bidders list	14.3%	80.6%
Negotiation	8.2%	9.7%
Others	8.2%	0.8%
Distribution of Contracts		
% General Contractor	79.3%	50.9%
% Subcontractors (specialty contractors)	18.5%	23.1%
% Design Build	1.9%	9.3%
% Professional Construction Mgmt (CM)	0.2%	15.3%
% Others	0.6%	0.6%

\$ in thousands



**Table 10**  
**Hospital Characteristics by Region**

<i>Region Number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Number of Hospitals	27	21	11	7	15	23	19
<b>Information about Hospital</b>							
Avg. Number of Licensed Beds	298.4	289.1	340.2	304.7	326.7	384.5	322.5
Avg. Number of Set Up Beds	233.3	218.8	333.3	255.3	281.5	293.1	244.4
Avg. Occupancy Rate	0.62	0.70	0.659	0.54833	0.7038	0.68978	0.77176
Avg. Number of Admission per Year	6,825	8,582	11,413	4,367	8,511	10,402	9,773
Avg. Age of the Primary Structure	26.6	38.9	36.7	24.1	20.6	33.7	33.9
Privately Owned	74.1%	61.9%	63.6%	42.9%	73.3%	69.6%	89.5%
Government Owned	25.9%	38.1%	36.4%	57.1%	26.7%	30.4%	10.5%
Federal	42.9%	50.0%	50.0%	50.0%	25.0%	57.1%	50.0%
State	0.0%	37.5%	50.0%	0.0%	25.0%	14.3%	50.0%
County	57.1%	12.5%	0.0%	50.0%	50.0%	28.6%	0.0%
City	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Construction Plan for the Hospital</b>							
Construction Expenditures in 1995	\$4,971	\$4,437	\$4,352	\$3,593	\$3,609	\$11,609	\$6,003
New Construction	24.0%	30.3%	26.2%	39.3%	20.1%	40.4%	14.8%
Maintenance & Repair	18.0%	15.1%	34.0%	24.3%	31.6%	18.1%	15.8%
Renovation/Remodeling	57.7%	54.7%	30.7%	36.4%	48.2%	41.5%	69.4%
General nature of Construction							
% Add Patient Room	10.0%	5.5%	19.9%	0.0%	0.7%	10.4%	6.2%
% Add Administration Space	5.5%	6.6%	7.8%	5.0%	4.1%	6.8%	2.4%
% Add Supprt Space(lab, pharmacy,etc)	32.0%	15.3%	27.3%	25.0%	43.1%	16.8%	23.8%
% Add Operating Rooms	3.2%	1.6%	3.0%	10.0%	4.6%	3.6%	3.8%
% Add Alzheimer's Ward	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%
% Add Psychiatric Ward	2.5%	4.7%	4.0%	5.0%	1.1%	2.5%	4.7%
% Others	42.3%	66.3%	38.0%	55.0%	46.4%	55.6%	56.8%
Construction by In-House Personnel	\$376	\$228	\$755	\$332	\$518	\$1,167	\$495
	(10.4%)	(7.4%)	(26.1%)	(18.7%)	(24.7%)	(22.7%)	(15.4%)
Construction Expenditure projected for 1996	\$6,384	\$3,914	\$4,023	\$3,150	\$4,056	\$9,707	\$4,918
New Construction	20.4%	11.6%	29.7%	39.3%	8.8%	38.5%	23.6%
Maintenance & Repair	24.0%	30.4%	30.4%	32.9%	35.0%	16.9%	24.1%
Renovation/Remodeling	55.6%	58.0%	39.9%	27.9%	63.8%	44.6%	52.3%
Construction Expenditure projected for 1997	\$5,292	\$2,958	\$11,443	\$15,043	\$6,518	\$7,009	\$4,714
New Construction	28.9%	16.3%	30.0%	62.1%	32.7%	40.8%	24.3%
Maintenance & Repair	17.0%	32.8%	23.9%	14.3%	22.3%	15.4%	18.1%
Renovation/Remodeling	52.7%	51.0%	46.0%	23.6%	44.3%	43.8%	58.5%
<b>Construction Budget for the Next Five Years (1997-2001)</b>							
Remain Roughly the Same	26.9%	38.1%	27.3%	0.0%	13.3%	21.7%	31.6%
Increase Slightly	7.7%	14.3%	9.1%	14.3%	13.3%	13.0%	10.5%
Increase Significantly	26.9%	14.3%	63.6%	42.9%	40.0%	21.7%	26.3%
Decrease Slightly	19.2%	19.0%	0.0%	0.0%	26.7%	26.1%	5.3%
Decrease Significantly	19.2%	14.3%	0.0%	42.9%	6.7%	17.4%	26.3%
% of Construction that is Govmnt Funded	17.1%	29.5%	47.5%	28.6%	12.9%	20.9%	31.8%

\$ in thousands





**Table 10 (Continued)**

# **Hospital Characteristics by Region**

<i>Region Number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<b>Information on Maintenance</b>							
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area							
Exterior Walls	8.8	8.8	10.5	8.2	4.2	6.3	7.1
Interior Walls	6.2	5.9	8.4	4.5	5.4	6.0	7.4
Security	5.9	5.6	9.8	10.8	7.4	7.4	9.8
Flooring	5.7	5.8	5.4	5.0	6.2	5.5	7.1
Electrical	5.8	5.8	2.8	5.3	5.6	5.0	4.9
Roof	2.5	5.5	4.6	4.9	3.2	4.6	4.4
Structure	9.3	12.1	9.2	7.7	10.0	10.5	10.3
Windows	9.1	7.1	7.7	8.8	6.0	7.3	6.1
Handicap Accessibility	6.7	6.2	8.9	5.8	7.3	6.6	7.7
Mechanical (HVAC)	2.8	1.5	1.6	2.1	2.5	2.5	2.8
Plumbing	4.5	4.9	2.8	3.8	4.8	4.1	5.2
Lighting	5.9	5.1	6.8	5.7	8.0	5.6	7.7
Conveyance (elevator)	6.9	6.2	6.4	7.3	5.8	7.1	6.8
Others	*14.0	*3.3	*9.0	*0.0	*2.0	*11.5	*1.5
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area							
Federal, State, Local Laws	2.9	3.4	4.2	3.7	2.9	3.5	4.8
Materials (accelerated deterioration)	4.4	4.6	5.0	5.3	5.1	4.9	4.6
Construction (poor workmanship)	5.3	5.5	5.0	3.8	5.0	5.4	5.0
Normal Wear and Tear	2.9	2.7	3.0	3.0	3.2	3.2	2.8
Aging of Facility	1.9	2.1	1.5	1.6	1.8	1.7	2.1
Poor Design	4.6	3.2	4.3	3.3	3.8	4.2	3.7
Technology Replacement	3.3	2.9	3.2	3.0	2.8	2.6	3.4
Others	*8.0	*0.0	*8.0	*0.0	*0.0	*3.0	*8.0
<b>Information on Construction Contracts</b>							
# of Constr. Contracts to be awarded, 1997	13.0	9.6	10.2	12.3	9.9	15.0	6.1
Type of Construction Contracts Awarded							
% Lump Sum (fixed price)	77.9%	79.3%	70.5%	84.3%	79.3%	64.8%	83.2%
% Cost Plus	15.5%	16.0%	12.7%	15.7%	13.7%	19.8%	8.4%
% Others	6.1%	5.0%	16.8%	0.0%	7.0%	15.4%	8.4%
% of Contracts that are competitively bid	76.7%	86.5%	87.7%	90.0%	89.3%	75.7%	92.5%
Invitation for Bidding							
Open to All Contractors	33.3%	23.8%	36.4%	28.6%	40.0%	39.1%	21.1%
Restricted to Select.Firms on bidders list	63.0%	76.2%	54.5%	42.9%	60.0%	52.2%	73.7%
Negotiation	7.4%	9.5%	9.1%	28.6%	0.0%	8.7%	5.3%
Others	0.0%	0.0%	0.0%	28.6%	0.0%	4.3%	10.5%
Distribution of Contracts							
% General Contractor	57.5%	61.5%	34.0%	76.7%	53.8%	45.7%	52.7%
% Subcontractors (specialty contractors)	27.3%	23.8%	38.1%	10.8%	18.3%	31.1%	12.4%
% Design Build	7.3%	5.6%	0.5%	12.5%	21.3%	6.6%	4.7%
% Professional Construction Mgmt (CM)	6.8%	10.3%	24.9%	0.0%	6.7%	14.6%	30.2%
% Others	1.4%	0.0%	0.4%	0.0%	0.0%	2.0%	0.0%

\* not an accurate representation due to either very limited number of or no respondent

\$ in thousands



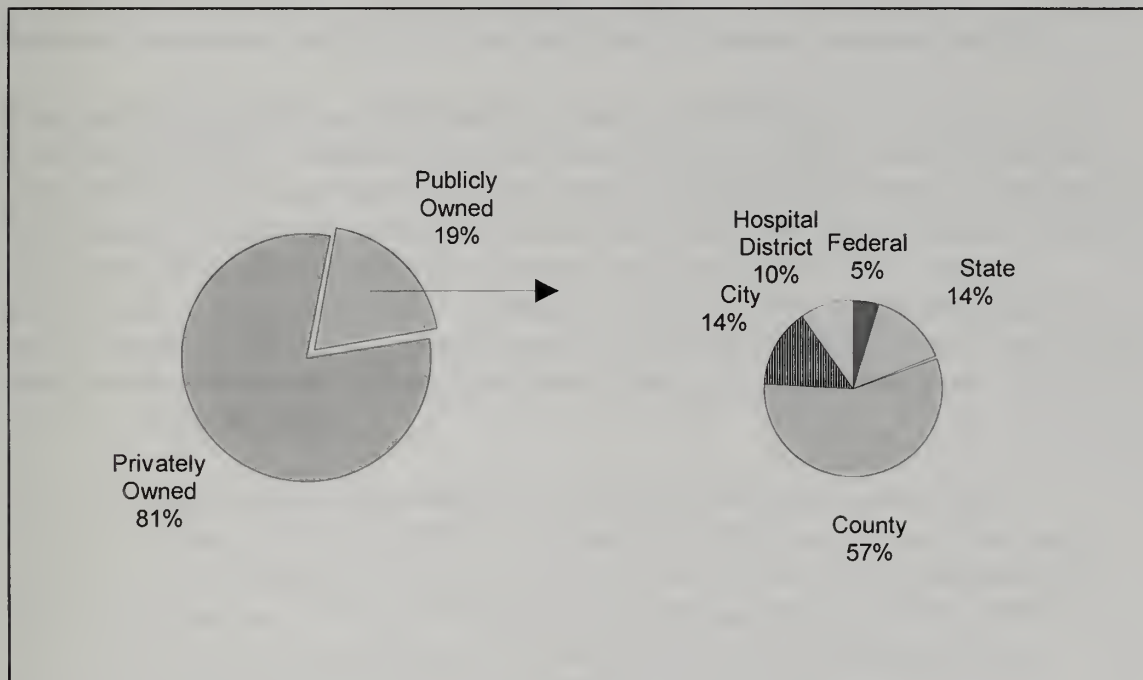


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## *Construction and Maintenance Activities, Needs, and Procurement Policies of Long Term Care Facilities*

### DESCRIPTION OF RESPONDENTS

A total of 110 responses were received from long-term health care facilities throughout the United States. These respondents represented facilities with an average of 195 skilled nursing beds, 69 intermediate care beds, 55 boarding house (assisted living) beds, 121 independent living unit beds, and 21 "other beds". Some examples of "other beds" are developmental disability home/apartment, acute care, adult day care, short term rehabilitation care, cottage, intensive care unit, etc. The average occupancy rate was 94.8% with an average of 199 admissions per year. The average age of the primary health care facilities was 26 years. Approximately 19% of the responding long-term care facilities were publicly-owned, of which 5%, 14%, 57%, 14%, and 10% are owned by federal, state, county, city, and hospital district agencies, respectively (Figure 10). See Table 11 for further details.



**Figure 10: Breakdown of Private and Publicly-Owned Facilities**



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## CONSTRUCTION ACTIVITIES

Table 12 contains and Figure 11 depicts construction expenditure figures for 1995, 1996, and 1997. The average expenditure on construction during 1995 was \$1.6 million. Of this amount, 20% was allocated to new construction, 38% was spent on maintenance and repairs, and 43% was spent on renovation.

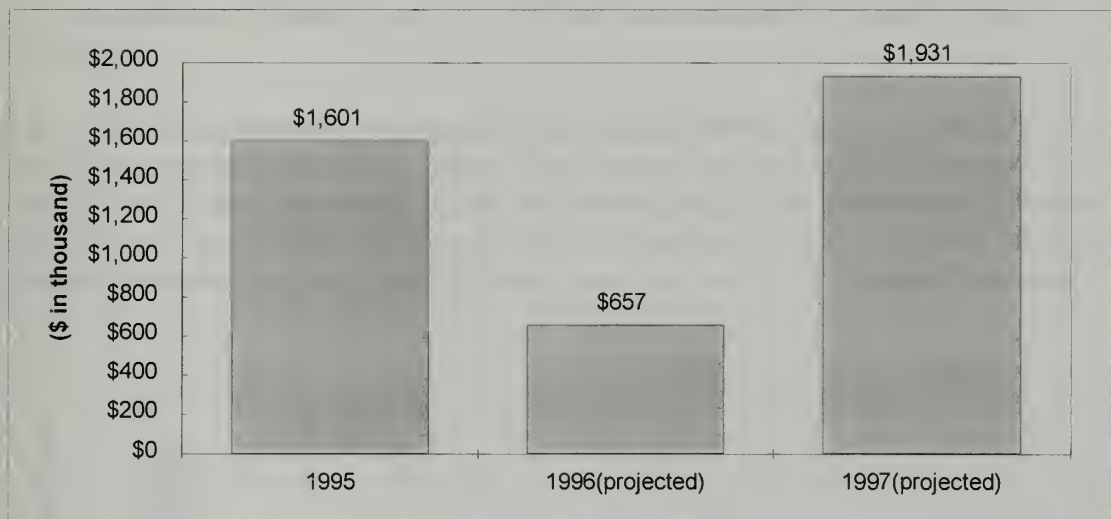
In response to the question of general nature of construction, the support space (dining facility, lounge, activities room, etc.) accounted for 19%, followed by the addition of rooms for residents at 13%, updating to meet building (fire) codes at 12%, and administrative space at 6.2% (Figure 12). The majority of the respondents (46%), however, indicated that these funds were spent in "other" areas, which included renovation/remodeling (20 respondents), followed by facelift (4 respondents), new buildings (4 respondents), general upkeep (3 respondents), HVAC system upgrade (2 respondents), and facility modernization (2 respondents). Some other examples of "other" areas mentioned were parking, sidewalk, utility, interior finish, new court yard, housing, and common area improvement.

The survey indicated only 18.4% (an average of \$96,000) of the construction work (not including maintenance and repairs) was performed by in-house personnel in 1995.

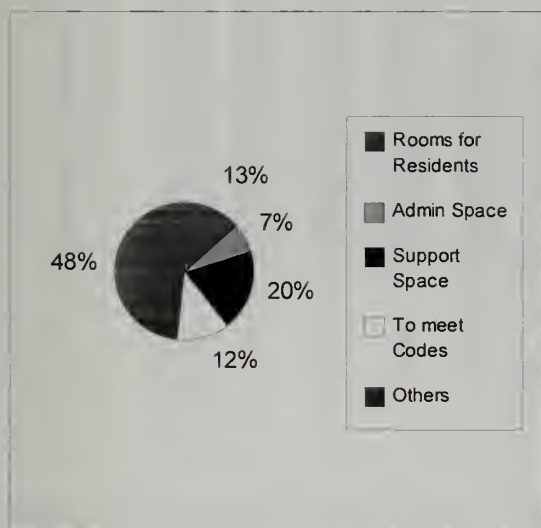
Respondents projected they will spend an average of \$657,000 in 1996 (22% for new construction, 43% for maintenance/repairs, and 35% for renovation) and \$1,931,000 in 1997 (29% for new construction, 31% for maintenance/repairs, and 40% for renovation). In projecting construction budgets for the next five years (1997-2001), Figure 13 shows 24%, 14%, 28%, 27%, and 8% of respondents respectively marked "Increase Significantly", "Increase Slightly", "Remain Roughly the Same", "Decrease Slightly", and "Decrease Significantly". Approximately 26% of all construction funds are received from government sources such as direct appropriations, tax supported bonds, etc. See Table 12 for further details.

There is a notable drop in expenditures for 1996 (\$657,000) compared to 1995 (\$1,601,000) and 1997 (\$1,931,000). According to the 1989 survey, long term care facilities spent an average of \$265,000 per year for the periods of 1984 through 1988, \$442,000 for the year 1989, and \$360,000 per year for the periods of 1990 - 1994. In conclusion, construction expenditures for long term care facilities appears to be fluctuating year to year without a clear pattern.

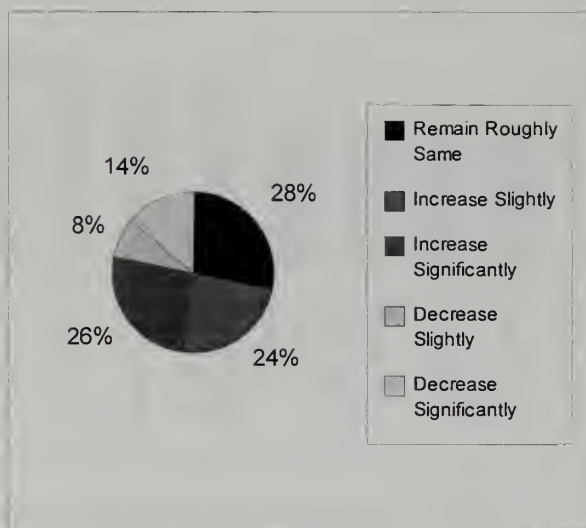




**Figure 11: Construction Expenditures from 1995-1997**



**Figure 12: General Nature of Construction**



**Figure 13: Construction Budget Trends for Next 5 years (1997-2001)**

## MAINTENANCE ACTIVITIES

A series of questions were asked about the maintenance aspects of the facility (see Table 13). In response to the question of what the sources of major maintenance and repair costs were, mechanical (HVAC) system was ranked the highest (greatest expenditure), followed by roof, plumbing, flooring, electrical, "others", lighting, windows, interior

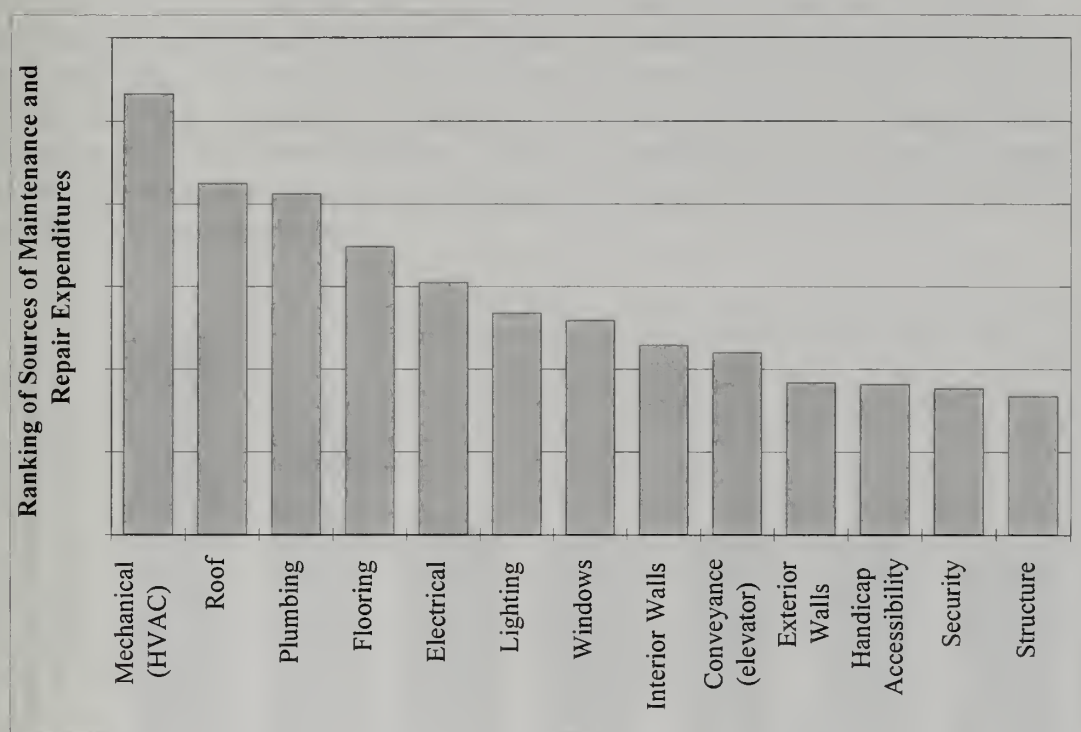




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walls, conveyance (elevator), exterior walls, handicap accessibility, security, and structure.

Figure 14 shows the ranking by expenditures among different areas of the facility. A total of nine respondents marked "others" (not shown) for this question. Examples of "others" were general maintenance, parking, landscaping, boiler replacement, retaining walls, etc. It is notable that the order of the worst problem areas as the source of major maintenance and repair costs was almost the same as it was for the hospital facilities.



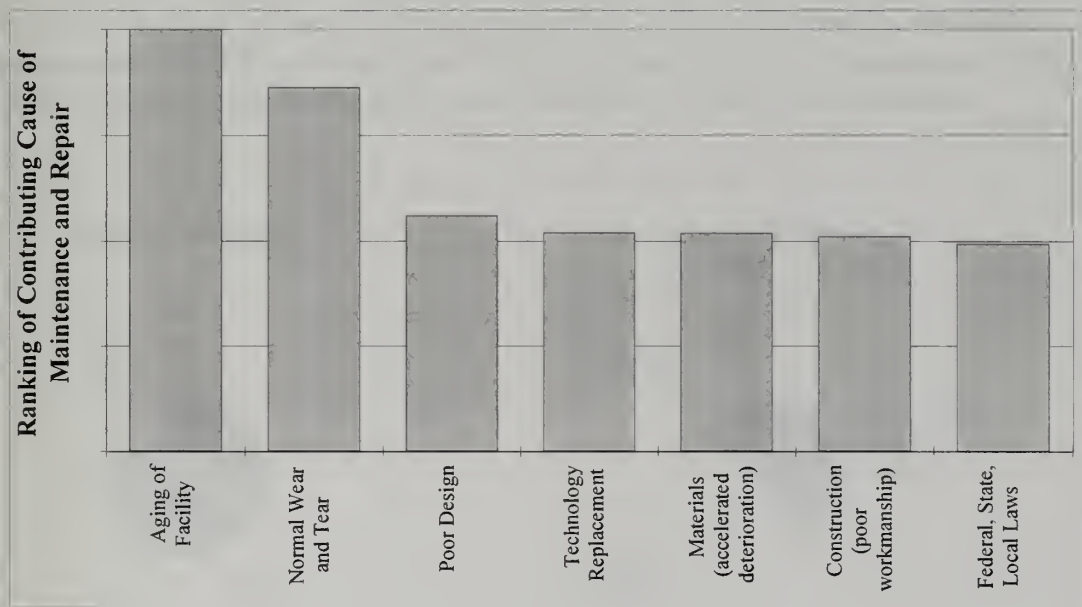
**Figure 14: Relative Expenditures on Major Maintenance and Repair** (Actual figures from Table 13 were adjusted by taking the inverse of a modified scale, 1-10, for a better visual representation of the ranking of expenditures)

A total of 50 participants responded to a question of what change would be made if any particular system or component were to be replaced based on the past problems. Concerns over HVAC system were expressed by 22 respondents. Desires were for larger capacity of the system, conversion to more sophisticated controls such as DDC (Direct Digital Control) system, more efficient system, and natural gas run air conditioning and heating systems. Roofing systems were a concern for eight respondents. However, no



clear conclusion could be drawn on which roof system was preferred by the respondents. Four respondents wanted to replace their windows with more energy efficient ones. Four respondents also stated that they would want to change their lighting system and kitchen/laundry equipment with more energy efficient ones. Some other examples of the changes they would like to make were better security (key) systems, modernized elevators, and better layout of nursing stations.

To the question of what the cause of significant maintenance and repair costs were, as shown in Figure 15, aging of facility was ranked the highest (most contributing cause), followed by normal wear and tear, poor design, technology replacement, materials (accelerated deterioration), construction (poor workmanship), federal, state, and local laws, and "others". A total of three respondents marked "others" as a part of major maintenance and repair costs. Examples of the "others" were poor mechanical design, change in usage, and water treatment. Again, it is notable that the order of the worst problem areas as the cause of the maintenance and repair costs was almost the same as it was for the hospital facilities.



**Figure 15: Relative Contributing Cause for Major Maintenance and Repair** (Actual figures from Table 13 were adjusted by taking the inverse of a modified scale, 1-10, for a better visual representation of the ranking of contributing cause)

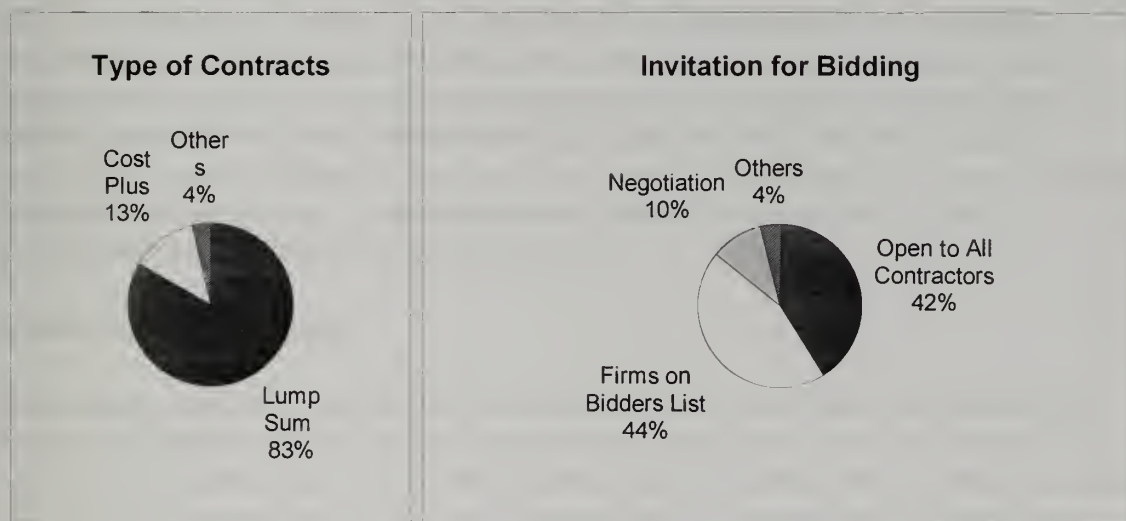


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## CONTRACTING PROCEDURES

A series of questions were asked about the awarding of construction contracts (see Table 14). An average of 3.5 construction contracts were expected to be awarded in 1997. Figure 16 shows that a majority (84%) of respondents use a lump sum (fixed price) contracting method, while 13% of them use a cost plus method. Approximately 3.5% responded that they used other methods. Examples of the other methods were GMP (guaranteed maximum price) (4 respondents) and time and materials (1 respondent). Most construction contracts (86%) are competitively bid. For these competitively bid contracts, only 42 % of them are "open to all contractors", 44% are "restricted to selected firms on bidders list", 10% are based on "negotiations", and 4% are "others". Examples of "others" include bids from three contractors, and open based on competitive market conditions.

To the question of how the cost of construction contracts were distributed among different contractors in monetary terms, 63% was awarded to general contractors, followed by subcontractors (specialty contractors) (21%), professional construction management (CM) (8%), design build (9%), and "others" (0.1%). Examples of "others" included architect/engineering design and furniture and equipment purchasing.



**Figure 16: Breakdown of Contracting Methods**





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## **ANALYSIS BY FACILITY CHARACTERISTIC**

The survey results were analyzed to see how the construction budgets, contracting procedures, facility maintenance, and other facility related matters were influenced by different variables such as the size of facility, percentage of skilled nursing beds, age of facility, occupancy rate, public vs private facilities, and regional differences.

### **Size of Facility**

Responding hospitals were grouped into four different size categories (see Table 15). As one might expect, the total budgets of the facilities and number of construction contracts to be awarded generally increased with the size of the long term care facility (total number of set-up beds). The larger long term care facilities also had generally slightly higher occupancy rates. Another variable noted to be related to the size of facilities was the ownership of long term care facilities. Larger facilities generally had a higher percentage of government ownership compared to smaller ones, although the overall average percentage of government ownership regardless of the size of facility was only 19.4%, which was considerably lower than that of hospitals (28.3%).

Many variables, however, did not reveal a discernible pattern in relation to the size of the long term care facility. Some of the examples of the variables that were not related to the size of long term care facilities were the allocation of the funds to new construction, renovation, and maintenance, the nature of expenditures in terms of adding different spaces, the percentage of construction work performed by in-house personnel, and problem areas for major maintenance or repair. This was also true for the type of construction contracts awarded (lump sum or cost plus), percentage of competitively bid contracts, bidding process, and distribution of construction contracts (general, subcontract, design build, or professional CM).

### **Skilled Nursing Facilities**

Responding long term care facilities were grouped into five different categories on the basis of the percentage of skilled nursing beds to overall set-up beds. About 40% of (42 of 105) respondents accounted for the percentage skilled nursing beds of 100% (see Table 16). It must be noted that a higher percentage of skilled nursing beds implies that more residents at the facilities have access to greater individualized health care services and that those facilities with skilled nursing beds have in-house capabilities to care for residents who might otherwise be hospitalized. Although the percentage of skilled



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nursing beds was considered as a parameter that might influence the amount of expenditures, no clear patterns were observed from the survey results.

### **Facility Age**

The results were analyzed by grouping facilities into five different age categories and the tabulated results are shown in Table 17. The older facilities generally tend to be larger (more set-up beds and skilled nursing beds) according to the survey results. An interesting result occurred for the first age category, less than five years of age, in terms of government versus private ownership. All eight facilities in the less than five years old category were privately owned. While this number is too small to make solid conclusions, it may be indicative of a trend away from public ownership of such facilities. Such a trend, if real, would have definite implications on the construction contracting practices.

Unlike the 1989 survey results, wherein the different age group of facility structures showed a few distinctive trends in budgets, areas of funds expended, occupancy rates, etc., these survey results did not reveal much in the way of conclusive trends for the age of facilities in most of the variables examined.

### **Occupancy Rate**

The occupancy rates provide an indication of a facility's activity. In this analysis, the occupancy rates of long term care facilities were grouped into five different categories (see Table 18). The most dramatic change from 1989 survey in terms of occupancy rates is an increase (33%) in the average occupancy rate, from 71.3% to 94.8%. From this change, it can be concluded that more people are treated or serviced by long term care facilities today, compared to six to seven years ago. Another interesting trend was observed in the average number of admission per year. Facilities with the higher occupancy rates tend to have fewer admissions per year. Longer staying period per admission in the long term care facility naturally drives the occupancy rate up, but reduces number of admission due to lower turn-over rates. While it is not otherwise indicated by the respondents, this trend may result in more new construction down the road when existing capacities are exceeded by demand.

As it was for the hospitals, the occupancy rates were closely related to the construction expenditures in 1995. The construction expenditures increased as the occupancy rates increased. It was readily apparent that the higher occupancy rates necessitated more expenditures in construction. The construction expenditures in 1996 and 1997, however, show somewhat increasing trends although the patterns are not as distinctive as 1995.





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A clear pattern was developed in the construction work performed by in-house personnel. Facilities with the higher occupancy rates spent more utilizing their in-house personnel.

However, the proportion of in-house work compared to overall expenditures did not yield a certain pattern. In other words, in-house construction work efforts increased with the construction expenditures as well as with the occupancy rates. This trend also points to a potential opportunity for contractors to enter into long term construction service contracts.

### **Public versus Private Facilities**

Responding long term care facilities were grouped into two different categories, public and private. (see Table 19) Public facilities, which account for only 19% of all respondents, tend to be slightly larger and older facilities when compared to private facilities. It is also observed that the private long term care facilities offer more variety of services. For example, private facilities included boarding (assisted living) beds, independent living unit beds, and other types of beds, while public facilities had almost none of these types.

Construction expenditures and plans were examined for these two categories. No clear pattern was evident in construction expenditures. The private facilities compared to the public facilities spent almost four times and twice as much in overall construction in 1995 and expected to do so again in 1997. However, the private facilities expected to spend only half of what public facilities spent in 1996. When the facilities were compared in terms of the budgets for the next five years, a greater portion of private facilities responded that their budgets would be "Increase Significantly", while more of the public facilities responded that their budget would be likely to "Decrease Significantly".

The allocation of funds to new construction, maintenance/repairs, and renovation was examined for public and private hospitals. There was a discernible pattern in allocating construction funds. The public facilities allocated a higher percentage of funds in renovation and remodeling, while the private facilities allocated a higher percentage of funds in new construction. The survey results also revealed that there were no clear differences in the amount of construction work performed by in-house personnel.

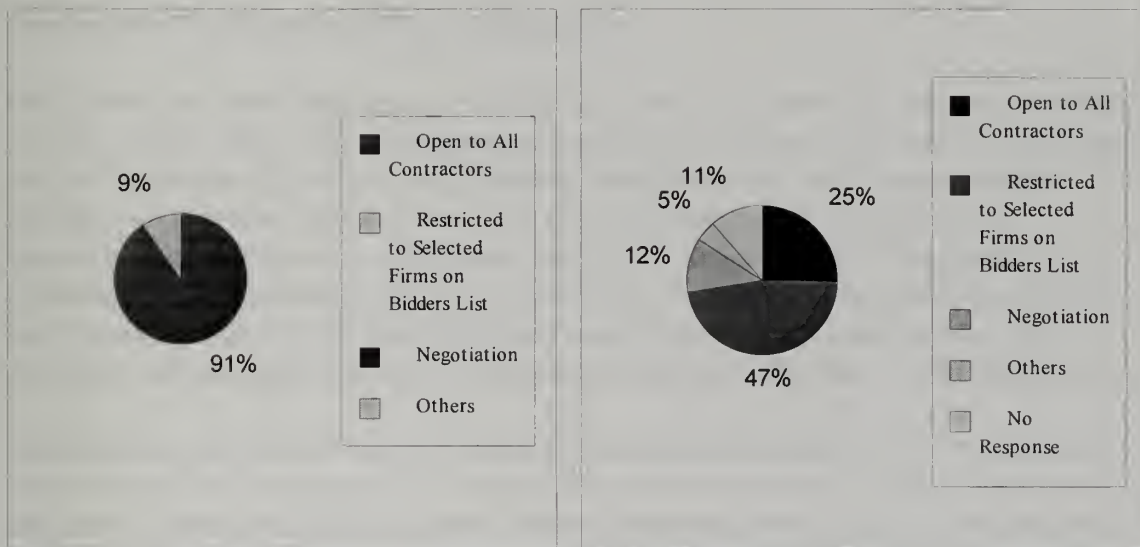
Contracting practices were examined. For the type of contracts awarded, significant differences were noted between public and private facilities. A total of 97% of all contracts awarded for the public facilities was the lump sum type contract, compared to





80% for the private facilities. Only 3% of contracts awarded for the public facilities was the cost plus type contract, compared to 16% for the private facilities. Both private and public facilities utilize some other types of contract such as time and materials and guaranteed maximum price (GMP). As for the competition aspect of the contract bidding process, the public facilities, as would be expected, used competitively bid contracts for almost all (95%) of their construction contracts. The competitively bid contracts were also the dominant (84%) procedure for private facilities.

Figure 17 shows clear differences between public and private facilities on how contractors are invited to submit bids. Most public facilities (91%) responded "open to all public", while this was the case for only 28% of private facilities respondents. The majority of private facilities (52%) used a bidding process that was "restricted to selected firms on bidders list", while this was the case for only 10% of the public facilities.



**Figure 17: Breakdown of Bidding Methods between Public and Private Facilities**

To a question of how the cost of construction contracts are distributed, the public facilities awarded majority (76%) of their contracts to general contractors and 7% to the specialty contractors, while the private facilities awarded considerably less (58%) for general contractors and more (25%) for specialty subcontractors. Also notable facts were the public and the private facilities both used design build contracts as much as 15% and 8% of overall contract awards, respectively. The private facilities also used 10% of their overall contract awards for the professional construction management (CM) contracts, compared to 1.5% for the public facilities.



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However, public and private facilities do not appear to differ appreciably when compared on the basis of the source and required areas of major maintenance and repairs.

### **Regional Differences**

Long term care facilities responding to this study were grouped into the same seven different regions as for the hospital study (see Table 20 for details). The regional data of only 63 of 110 facilities was available to examine this category. Regions three, four, and five only had two, four, and one respondents, respectively. Although it was generally difficult to note clear and accurate patterns on most variables, readers might be able to obtain information for specific variables on the interested regions from the table provided.

### **CONSTRUCTION RELATED PROBLEMS**

One of the questions in the survey was "What is your top construction related problem?" A total of 53% (58 of 110) of respondents provided an answer to the question. The most frequently addressed problem was obtaining qualified contractors (7 respondents). . Among other answers provided were: the timely completion of the projects (6 respondents); meeting state, safety code, and ADA (Americans with Disabilities Act) requirements (3 respondents); aging of facilities (5 respondents); interruption of the health care operation (4 respondents); high construction cost (2 respondents); poor, outdated, and incomplete design (5 respondents); and lack of funds (3 respondents).

Problems that were inherent to the long term care facilities included: HVAC system (7 respondents); roof replacement (3 respondents); asbestos removal; window replacement; electrical system; and lighting. Other problem mentioned were: lack of coordination between contractors; warranty and contract close-out; lack of quality CM (construction manager); material availability (2 respondents); and compliance with the contract documents.

Most of the items addressed above appear to be typical problems related to the construction of long term care facilities, as the similar problems had been addressed in the previous survey performed in 1989.

### **FUTURE TRENDS IMPACTING CONSTRUCTION**

The last question asked in the survey was "What trends relating to construction, if any, do you see impacting facility construction over the next 5- 10 years?" A total of 43% (47 of





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110) of respondents provided an answer to this question. The most frequently addressed future trend was the construction cost escalation (11 respondents) due to overly restrictive code requirements, ADA, increasing materials costs, etc. They predicted there will be more stringent new code requirements especially due to the ADA. Five respondents expected less funds available for the future. The government cutback in spending was one of the reasons provided. The formation of capital (2 respondents) was mentioned to cope with the funding shortage.

The change in service philosophy appeared to be evident. More emphasis is expected to be placed upon offering a more comfortable environment for the patient such as a private room setting, more common space in the facility, etc. Three respondents predicted more managed care and more government involvement in the future due to federal and state regulations. Changes in technology seemed to have some impact on construction. A total of four respondents said that new technology and materials will have a great impact on future facility design. Changes in contracting were also mentioned. Some examples of those mentioned are more design build contracts (2 respondents), emphasis on value engineering, and more partnering between the owner and contractor.

## **CONCLUSIONS**

Construction budgets for the long term care facility construction industry overall for the next five years is expected to remain at a steady level. When increasing construction costs are considered, it appears market opportunity for construction contractors for the long term health care industry is not as bright as it was in the past. However, a few pointers out of these survey results could be utilized in seeking future business opportunities.

There is a greater emphasis on maintenance and repairs; and renovation and remodeling over new construction due to several reasons such as change in operational philosophy, new technology accommodation, savings of funds, etc. Increased need for in-house construction capability could signal an opportunity for long term construction service contracts to be established.

High occupancy rate (average of 95%), although not explicitly addressed by the respondents, can be viewed as a potential new construction opportunity down the road when existing capacities are exceeded by demand and funds become available.

Contractors also must be aware of the different methods currently being used to award the construction contracts. As it always has been, the public hospitals will more likely have





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bidding open to all interested parties, while private hospitals will use selected bidder's list more extensively. The public hospitals also will use the lump sum type contract extensively, while the private hospitals are expected to mix other types such as cost plus and guaranteed maximum price contracts with the lump sum type of contract. The survey results also suggest that more design build for fast tracking projects will be utilized in the future.



**Table 11**  
**General Description of Facilities\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
Number of Skilled Nursing Beds	195	178	725	0
Number of Intermediate Care Beds	69	60	292	0
Number of Boarding House(assisted living) Beds	55	46	248	0
Number of Independent Living Unit Beds	121	84	482	0
Number of Other Beds	21	3	169	0
Occupancy Rate	94.8%	97.0%	100.0%	70.0%
Number of Admission per Year	199	133	1600	8
Age of the Primary Structure (Years)	26	25	92	1
Government Owned	19.4%			
Federal	4.8%			
State	14.3%			
County	57.1%			
City	14.3%			
Hospital District	9.5%			
Privately Owned	80.6%			

\*110 respondents



**Table 12****Expenditure on Construction, Maintenance and Repair\***

<i>descriptor</i>	<i>mean**</i>	<i>median**</i>	<i>maximum**</i>	<i>minimum**</i>
Construction Expenditures in 1995	\$1,601	\$200	\$25,000	\$0
New Construction	19.7%			
Maintenance & Repair	37.5%			
Renovation/Remodeling	42.9%			
General Nature of Construction				
% Add Rooms for Residents	12.7%			
% Add Administration Space	6.2%			
% Add Support Space(dining, lounge, activities r	18.9%			
% Updating to meet Building(fire) Code	11.5%			
% Other	45.6%			
Construction(excl. maint./repair) by In-House Person	\$96	\$11	\$1,280	\$0
Construction(excl. maint./repair) by In-House Person	18.4%	5.0%	100.0%	0.0%
Construction Expenditures projected for 1996	\$657	\$150	\$14,500	\$0
New Construction	21.3%	0.0%	100.0%	0.0%
Maintenance & Repair	42.6%	30.0%	100.0%	0.0%
Renovation/Remodeling	34.8%	25.0%	100.0%	0.0%
Construction Expenditures projected for 1997	\$1,931	\$300	\$21,000	\$0
New Construction	28.6%	0.0%	100.0%	0.0%
Maintenance & Repair	31.0%	20.0%	100.0%	0.0%
Renovation/Remodeling	40.1%	31.7%	100.0%	0.0%
Construction Budgets for the Next Five Years (1997-2001)				
Remain Roughly the Same	28.4%			
Increase Slightly	23.5%			
Increase Significantly	26.5%			
Decrease Slightly	7.8%			
Decrease Significantly	13.7%			
% of Construction that is Government Funded	25.8%	0.0%	100.0%	0.0%

\*110 respondents

\*\*\$ in thousands





**Table 13**  
**Information on Maintenance\*\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
Source of Major Maintenance and/or Repair Costs, "1" being the worst problem area				
Exterior Walls	7.6	9.0	13.0	1.0
Interior Walls	6.1	6.0	12.0	1.0
Security	7.9	9.0	15.0	1.0
Flooring	4.0	3.5	9.0	1.0
Electrical	4.6	4.0	11.0	1.0
Roof	3.3	2.0	12.0	1.0
Structure	8.4	10.0	13.0	1.0
Windows	5.4	5.0	13.0	1.0
Handicap Accessibility	7.7	8.0	14.0	1.0
Mechanical (HVAC)	2.6	2.0	9.0	1.0
Plumbing	3.4	3.0	8.0	1.0
Lighting	5.2	5.0	11.0	1.0
Conveyance (elevator)	6.4	6.0	13.0	1.0
Others	*2.3	*1.0	*5.0	*1.0
Cause of Significant Maintenance and Repair Costs, "1" being the worst problem area				
Federal, State, Local Laws	4.0	4.0	7.0	1.0
Materials (accelerated deterioration)	3.9	4.0	7.0	1.0
Construction (poor workmanship)	3.9	4.0	7.0	1.0
Normal Wear and Tear	2.3	2.0	7.0	1.0
Aging of Facility	2.0	2.0	7.0	1.0
Poor Design	3.6	3.0	7.0	1.0
Technology Replacement	3.8	4.0	7.0	1.0
Others	*4.6	*4.0	*8.0	*1.0

\* not an accurate representation due to either very limited number of or no respondent

\*\*110 respondents



**Table 14**  
**Information on Contracting\***

<i>descriptor</i>	<i>mean</i>	<i>median</i>	<i>maximum</i>	<i>minimum</i>
# of Construction Contracts to be Awarded in 1997	3.5	2.5	20.0	0.0
Type of Construction Contracts Awarded				
% Lump Sum (fixed price)	83.6%			
% Cost Plus	12.9%			
% Others	3.5%			
Percentage of Contracts that are competitively Bid	86.2%			
Invitation for Bidding				
Open to All Contractors	41.5%			
Restricted to Selected Firms on Bidders List	44.3%			
Negotiation	10.4%			
Others	3.8%			
Distribution of Contracts				
% General Contractor	62.5%			
% Subcontractors (specialty contractors)	20.8%			
% Design Build	9.0%			
% Professional Construction Mgmnt (CM) Contract	8.4%			
% Others	0.1%			

\*110 respondents



**Table 15**

**Variable Impacted by Size (# of Set-Up Beds) of Facility**

<i>Number of Set-Up Beds</i>	<i>200-<sup>**</sup></i>	<i>200-300<sup>**</sup></i>	<i>300-400<sup>**</sup></i>	<i>400+<sup>**</sup></i>
Number of Hospitals	26	29	23	30
<b>Information about Facility</b>				
Avg. Number of Set-up Beds	140.9	248.0	346.7	547.5
Avg. Percent of Skilled Nursing Beds	81.7%	70.7%	62.8%	48.0%
Avg. Number of Skilled Nursing Beds	117.7	172.0	218.9	261.9
Avg. Number of Intermediate Care Beds	24.7	118.9	72.9	77.2
Avg. Occupancy Rate	94.0%	93.9%	94.4%	96.6%
Avg. Number of Admission per Year	177.5	226.4	205.9	191.6
Avg. Age of the Primary Structure (Years)	21.3	26.8	24.5	30.4
Privately Owned	76.9%	82.8%	78.3%	83.3%
Government Owned	23.1%	17.2%	21.7%	16.7%
Federal	0.0%	0.0%	20.0%	0.0%
State	0.0%	40.0%	20.0%	0.0%
County	33.3%	20.0%	80.0%	100.0%
City	16.7%	40.0%	0.0%	0.0%
Hospital District	33.3%	0.0%	0.0%	0.0%
<b>Construction Plans for Long Term Care Facility</b>				
Construction Expenditures in 1995	\$520	\$2,128	\$1,752	\$1,869
New Construction	10.6%	10.5%	26.0%	29.9%
Maintenance & Repair	50.6%	42.8%	31.3%	29.3%
Renovation/Remodeling	38.8%	46.7%	42.7%	41.1%
<b>General Nature of Construction</b>				
% Add Rooms for Residents	8.2%	8.5%	18.1%	15.2%
% Add Administration Space	1.1%	6.5%	8.5%	7.6%
% Add Supprt Space(dining, lounge, activities room)	14.9%	10.9%	19.6%	25.9%
% Updating to meet Building(fire) Code	8.1%	11.2%	12.7%	12.9%
% Others	57.5%	52.6%	41.9%	36.6%
Construction(excl. maint./repair) by In-House Personnel	\$35	\$56	\$203	\$109
	(16.3%)	(28.5%)	(21.2%)	(10.4%)
Construction Expenditures projected for 1996	\$167	\$190	\$854	\$1,330
New Construction	24.4%	11.5%	22.3%	27.7%
Maintenance & Repair	46.7%	47.6%	45.0%	35.4%
Renovation/Remodeling	27.3%	40.6%	28.5%	36.9%
Construction Expenditures projected for 1997	\$1,269	\$321	\$2,635	\$3,254
New Construction	16.9%	18.8%	33.4%	41.6%
Maintenance & Repair	28.9%	37.3%	36.9%	23.6%
Renovation/Remodeling	54.2%	43.4%	28.6%	34.8%
<b>Construction Budgets for the Next Five Years (1997-2001)</b>				
Remain Roughly the Same	34.6%	37.9%	17.4%	16.7%
Increase Slightly	19.2%	24.1%	17.4%	26.7%
Increase Significantly	19.2%	20.7%	39.1%	20.0%
Decrease Slightly	15.4%	3.4%	4.3%	6.7%
Decrease Significantly	7.7%	3.4%	13.0%	26.7%
Percentage of Construction that is Government Funded	15.7%	38.0%	18.9%	25.7%

\$ in thousands

<sup>\*\*</sup>Category range includes the lower-end integer.





**Table 15 (Continued)**

**Variable Impacted by Size (# of Set-Up Beds) of Facility**

<i>Number of Set-Up Beds</i>	<i>200-<sup>**</sup></i>	<i>200-300<sup>**</sup></i>	<i>300-400<sup>**</sup></i>	<i>400+<sup>**</sup></i>
<b>Information on Maintenance</b>				
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area				
Exterior Walls	8.4	6.3	5.9	8.9
Interior Walls	6.3	4.5	5.1	7.8
Security	8.4	5.7	7.1	9.9
Flooring	3.7	3.8	4.2	4.7
Electrical	3.7	4.8	4.9	5.0
Roof	3.9	2.3	3.2	3.8
Structure	8.8	8.0	6.7	9.1
Windows	5.6	5.8	4.9	5.3
Handicap Accessibility	6.6	9.2	8.3	7.4
Mechanical (HVAC)	2.8	2.6	3.0	2.2
Plumbing	3.3	3.5	3.5	3.3
Lighting	4.4	5.7	4.9	6.1
Conveyance (elevator)	8.2	5.3	5.4	6.3
Others	*1.0	*4.0	*2.5	*2.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area				
Federal, State, Local Laws	3.5	4.1	4.7	4.1
Materials (accelerated deterioration)	3.9	3.8	4.2	3.6
Construction (poor workmanship)	4.1	3.3	3.6	4.8
Normal Wear and Tear	2.0	2.6	2.7	2.2
Aging of Facility	2.5	2.1	1.7	1.8
Poor Design	3.7	2.9	3.1	4.6
Technology Replacement	3.5	4.2	3.4	4.2
Others	*0.0	*4.7	*1.0	*8.0
<b>Information on Construction Contracts</b>				
# of Construction Contracts to be awarded in 1997	3.0	2.4	3.5	4.6
Type of Construction Contracts Awarded				
% Lump Sum (fixed price)	82.4%	92.6%	85.8%	74.2%
% Cost Plus	12.9%	7.4%	4.7%	24.4%
% Others	57.5%	52.6%	41.9%	36.6%
% of Contracts that are competitively bid	96.4%	88.5%	70.9%	88.0%
Invitation for Bidding				
Open to All Contractors	46.2%	44.8%	39.1%	30.0%
Restricted to Selected Firms on Bidders List	38.5%	41.4%	39.1%	53.3%
Negotiation	7.7%	3.4%	21.7%	10.0%
Others	3.8%	3.4%	0.0%	6.7%
Distribution of Contracts				
% General Contractor	64.4%	64.3%	77.3%	48.2%
% Subcontractors (specialty contractors)	26.0%	16.4%	13.8%	25.3%
% Design Build	0.2%	17.5%	1.7%	14.1%
% Professional Construction Mgmnt (CM)	11.9%	1.4%	7.3%	12.8%
% Others	0.0%	0.3%	0.0%	0.1%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.



**Table 16**

**Variable Impacted by Percent Skilled Nursing Beds**

<b>% Skilled Nursing Beds</b>	<b>25-<sup>**</sup></b>	<b>25-50<sup>**</sup></b>	<b>50-75<sup>**</sup></b>	<b>75-100<sup>**</sup></b>	<b>100<sup>**</sup></b>
Number of Hospitals	23	17	14	9	42
<b>Information about Facility</b>					
Avg. Number of Set-up Beds	391.4	405.4	364.8	224.5	275.3
Avg. Percent of Skilled Nursing Beds	16.8%	38.9%	58.4%	86.4%	100.0%
Avg. Number of Skilled Nursing Beds	67.3	152.1	214.7	192.1	275.3
Avg. Number of Intermediate Care Beds	98.2	50.5	95.0	20.3	0.0
Avg. Occupancy Rate	94.5%	94.9%	95.9%	89.3%	95.8%
Avg. Number of Admission per Year	157.6	193.6	197.8	260.6	219.8
Avg. Age of the Primary Structure (Years)	21.8	27.4	28.6	30.4	26.4
Privately Owned	91.3%	100.0%	92.9%	77.8%	64.3%
Government Owned	8.7%	0.0%	7.1%	22.2%	35.7%
Federal	50.0%	0.0%	0.0%	0.0%	0.0%
State	50.0%	0.0%	0.0%	50.0%	0.0%
County	0.0%	0.0%	100.0%	0.0%	73.3%
City	0.0%	0.0%	0.0%	0.0%	20.0%
Hospital District	50.0%	0.0%	0.0%	50.0%	0.0%
<b>Construction Plans for Long Term Care Facility</b>					
Construction Expenditures in 1995	\$3,676	\$1,877	\$833	\$553	\$1,042
New Construction	33.2%	27.9%	26.3%	0.0%	13.0%
Maintenance & Repair	25.7%	34.1%	32.8%	43.3%	43.2%
Renovation/Remodeling	41.7%	38.0%	40.9%	56.7%	43.8%
<b>General Nature of Construction</b>					
Add Rooms for Residents	18.4%	20.5%	12.3%	0.0%	8.3%
Add Administration Space	6.9%	9.5%	2.5%	16.7%	3.3%
Add Suprt Space(dining, lounge, activity rm)	11.7%	22.3%	46.2%	5.0%	12.6%
Updating to meet Building(fire) Code	15.8%	16.9%	12.7%	0.0%	6.9%
Others	42.7%	30.8%	26.4%	65.8%	62.6%
Construction by In-House Personnel (\$)	\$155	\$149	\$32	\$19	\$90
	(15.0%)	(19.1%)	(13.9%)	(16.7%)	(22.4%)
Construction Expenditures projected for 1996	\$423	\$712	\$608	\$180	\$904
New Construction	14.7%	30.6%	35.3%	28.6%	14.3%
Maintenance & Repair	41.0%	40.5%	46.5%	42.1%	42.1%
Renovation/Remodeling	44.3%	22.8%	18.3%	29.3%	43.0%
Construction Expenditures projected for 1997	\$1,412	\$2,477	\$3,260	\$493	\$1,934
New Construction	43.0%	42.0%	49.4%	6.3%	13.1%
Maintenance & Repair	25.3%	17.1%	31.2%	42.5%	37.1%
Renovation/Remodeling	31.1%	39.5%	19.4%	51.3%	49.8%
<b>Construction Budgets for the Next Five Years (1997-2001)</b>					
Remain Roughly the Same	30.4%	11.8%	14.3%	44.4%	31.0%
Increase Slightly	17.4%	29.4%	14.3%	22.2%	21.4%
Increase Significantly	26.1%	29.4%	50.0%	0.0%	19.0%
Decrease Slightly	4.3%	5.9%	0.0%	22.2%	9.5%
Decrease Significantly	8.7%	23.5%	14.3%	11.1%	11.9%
% of Construction that is Government Funded	9.8%	22.9%	29.8%	21.9%	32.8%

\$ in thousands

<sup>\*\*</sup>Category range includes the lower-end integer.





**Table 16 (Continued)**

**Variable Impacted by Percent Skilled Nursing Beds**

<b>% Skilled Nursing Beds</b>	<b>25-<sup>**</sup></b>	<b>25-50<sup>**</sup></b>	<b>50-75<sup>**</sup></b>	<b>75-100<sup>**</sup></b>	<b>100<sup>**</sup></b>
<b>Information on Maintenance</b>					
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area					
Exterior Walls	7.0	5.7	9.3	11.0	8.1
Interior Walls	5.2	5.8	7.2	5.0	7.3
Security	7.7	6.7	5.6	8.7	9.6
Flooring	4.4	3.3	6.4	3.0	4.1
Electrical	5.4	5.3	5.0	4.0	4.0
Roof	2.4	3.4	3.1	4.3	3.3
Structure	10.9	3.8	8.8	12.0	7.9
Windows	6.9	10.0	3.8	5.0	4.1
Handicap Accessibility	8.5	7.5	10.3	7.0	6.6
Mechanical (HVAC)	2.5	2.4	2.3	2.7	2.8
Plumbing	3.1	3.8	3.5	4.1	3.2
Lighting	6.5	5.3	5.3	3.6	4.9
Conveyance (elevator)	6.5	6.2	6.3	6.3	6.1
Others	*3.5	*2.3	*1.0	*0.0	*2.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area					
Federal, State, Local Laws	4.0	3.9	4.8	4.2	3.9
Materials (accelerated deterioration)	3.5	4.9	3.3	4.4	3.7
Construction (poor workmanship)	3.2	4.7	3.7	4.6	4.1
Normal Wear and Tear	2.3	2.1	1.8	2.7	2.4
Aging of Facility	1.9	1.6	1.9	1.8	2.4
Poor Design	3.6	3.5	3.8	2.6	3.8
Technology Replacement	4.4	4.2	3.7	3.8	3.6
Others	*0.0	*3.7	*0.0	*0.0	*6.0
<b>Information on Construction Contracts</b>					
# Construction Contracts to be awarded in 1997	3.9	3.1	4.9	1.4	3.2
Type of Construction Contracts Awarded					
% Lump Sum (fixed price)	76.9%	91.8%	76.7%	97.1%	84.3%
% Cost Plus	21.9%	3.2%	21.3%	2.9%	12.9%
% Others	42.7%	30.8%	26.4%	65.8%	62.6%
% of Contracts that are competitively bid	81.6%	69.0%	78.3%	98.9%	93.3%
Invitation for Bidding					
Open to All Contractors	21.7%	17.6%	35.7%	22.2%	61.9%
Restricted to Selected Firms on Bidders List	56.5%	58.8%	50.0%	44.4%	31.0%
Negotiation	4.3%	17.6%	14.3%	22.2%	4.8%
Others	0.0%	0.0%	14.3%	11.1%	0.0%
Distribution of Contracts					
% General Contractor	62.3%	47.2%	43.6%	86.4%	69.1%
% Subcontractors (specialty contractors)	23.7%	16.1%	31.0%	12.1%	17.7%
% Design Build	14.0%	3.3%	21.8%	1.4%	6.2%
% Professional Construction Mgmnt (CM)	0.8%	33.3%	3.5%	0.0%	8.7%
% Others	0.0%	0.0%	0.2%	0.0%	0.0%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.

\$ in thousands





Table 17

## Variable Impacted by Age of Structure

<i>Age of Primary Structure</i>	<i>0-5**</i>	<i>5-15**</i>	<i>15-25**</i>	<i>25-35**</i>	<i>35-45**</i>	<i>45+**</i>
Number of Hospitals	8	18	34	28	8	9
<b>Information about Facility</b>						
Avg. Number of Set-up Beds	163.7	176.9	292.0	253.3	390.5	334.4
Avg. Number of Skilled Nursing Beds	103.1	144.4	199.6	201.1	286.5	268.9
Avg. Number of Intermediate Care Beds	60.6	32.5	92.4	52.2	104.0	65.5
Avg. Occupancy Rate	95.0%	93.0%	95.4%	94.6%	95.3%	94.9%
Avg. Number of Admission per Year	227.0	210.5	172.4	247.0	164.2	179.8
Avg. Age of the Primary Structure (Years)	3.3	11.2	22.0	30.1	38.6	67.3
Privately Owned	100.0%	77.8%	79.4%	85.7%	62.5%	77.8%
Government Owned	0.0%	22.2%	20.6%	14.3%	37.5%	22.2%
Federal	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%
State	0.0%	0.0%	14.3%	25.0%	0.0%	50.0%
County	0.0%	50.0%	71.4%	25.0%	100.0%	50.0%
City	0.0%	50.0%	0.0%	25.0%	0.0%	0.0%
Hospital District	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Construction Plans for Long Term Care Facility</b>						
Construction Expenditures in 1995	\$2,679	\$2,551	\$1,940	\$556	\$891	\$2,283
New Construction	28.6%	25.5%	25.3%	12.7%	11.8%	21.0%
Maintenance & Repair	28.6%	25.9%	39.8%	50.2%	18.9%	31.0%
Renovation/Remodeling	42.9%	48.6%	34.9%	37.1%	70.6%	48.0%
General Nature of Construction						
Add Rooms for Residents	0.0%	24.8%	15.9%	3.5%	1.7%	25.0%
Add Administration Space	0.0%	11.5%	2.2%	12.9%	0.0%	0.9%
Add Suprt Space(dining,lounge,activity rm)	0.0%	26.2%	17.7%	20.6%	11.7%	26.2%
Updating to meet Building(fire) Code	25.0%	3.0%	15.0%	4.1%	25.0%	12.1%
Others	75.0%	27.7%	42.8%	54.4%	61.7%	28.7%
Construction by In-House Personnel (\$)	\$81	\$42	\$146	\$115	\$18	\$81
	(1.0%)	(24.0%)	(26.6%)	(16.9%)	(6.0%)	(11.5%)
Construction Expenditures projected for 1996	\$233	\$436	\$589	\$1,082	\$666	\$504
New Construction	20.0%	40.4%	15.3%	23.8%	5.0%	11.3%
Maintenance & Repair	25.0%	30.8%	54.9%	41.8%	38.8%	47.7%
Renovation/Remodeling	41.7%	25.5%	29.9%	34.1%	56.3%	41.1%
Construction Expenditures projected for 1997	\$212	\$2,368	\$3,054	\$1,476	\$825	\$1,540
New Construction	34.0%	42.9%	36.4%	18.0%	14.3%	19.1%
Maintenance & Repair	35.0%	20.2%	34.7%	34.3%	23.6%	34.0%
Renovation/Remodeling	27.0%	36.2%	28.9%	47.8%	62.1%	46.9%
<b>Construction Budgets for the Next Five Years (1997-2001)</b>						
Remain Roughly the Same	37.5%	16.7%	23.5%	42.9%	25.0%	11.1%
Increase Slightly	0.0%	22.2%	20.6%	14.3%	37.5%	44.4%
Increase Significantly	25.0%	33.3%	32.4%	10.7%	12.5%	22.2%
Decrease Slightly	25.0%	5.6%	2.9%	7.1%	12.5%	11.1%
Decrease Significantly	0.0%	11.1%	14.7%	21.4%	12.5%	0.0%
% of Construction that is Government Funded	2.9%	19.3%	38.2%	17.0%	34.4%	41.4%

\$ in thousands

Category range includes the lower-end integer.



**Table 17 (Continued)**

**Variable Impacted by Age of Structure**

<i>Age of Primary Structure</i>	<i>0-5**</i>	<i>5-15**</i>	<i>15-25**</i>	<i>25-35**</i>	<i>35-45**</i>	<i>45+**</i>
<b>Information on Maintenance</b>						
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area						
Exterior Walls	*0.0	3.6	8.4	9.0	10.0	8.4
Interior Walls	2.0	3.4	7.2	6.8	6.0	7.2
Security	4.0	4.3	8.4	10.4	10.0	7.0
Flooring	2.7	3.4	4.0	4.3	4.6	4.3
Electrical	3.0	4.3	4.7	4.5	4.0	6.1
Roof	1.7	2.1	4.1	2.5	4.4	3.4
Structure	*0.0	6.5	9.9	8.9	7.8	7.5
Windows	*0.0	4.0	4.8	4.3	7.5	6.2
Handicap Accessibility	*0.0	7.5	7.0	7.2	9.4	9.2
Mechanical (HVAC)	1.3	2.5	2.4	2.6	4.0	3.7
Plumbing	3.0	2.6	3.0	3.3	4.6	5.3
Lighting	3.0	3.0	6.3	4.1	5.8	7.7
Conveyance (elevator)	2.0	4.5	6.4	6.3	8.0	6.8
Others	*3.0	*2.0	*1.0	*2.5	*2.5	*0.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area						
Federal, State, Local Laws	4.0	4.0	4.0	3.5	4.2	4.9
Materials (accelerated deterioration)	1.5	3.1	3.9	4.1	4.0	4.8
Construction (poor workmanship)	1.5	2.0	4.8	3.9	5.5	3.8
Normal Wear and Tear	2.6	1.9	2.4	2.6	2.8	2.0
Aging of Facility	6.5	2.3	1.9	1.8	1.7	1.9
Poor Design	2.5	3.3	4.1	3.1	3.8	4.6
Technology Replacement	4.3	3.3	4.1	3.8	3.7	3.7
Others	*4.5	*0.0	3.0	*0.0	*0.0	*0.0
<b>Information on Construction Contracts</b>						
# Construction Contract to be awarded in 1997	1.3	3.8	4.0	2.8	3.1	1.1
Type of Construction Contracts Awarded						
% Lump Sum (fixed price)	83.3%	86.8%	85.2%	79.8%	85.7%	75.0%
% Cost Plus	16.7%	13.2%	7.0%	15.8%	14.3%	25.0%
% Others	75.0%	27.7%	42.8%	54.4%	61.7%	28.7%
% of Contracts that are competitively bid	82.5%	77.1%	89.8%	86.0%	77.9%	100.0%
Invitation for Bidding						
Open to All Contractors	12.5%	38.9%	50.0%	35.7%	50.0%	33.3%
Restricted to selected firms on Bidders List	62.5%	33.3%	44.1%	42.9%	25.0%	55.6%
Negotiation	0.0%	22.2%	5.9%	14.3%	12.5%	0.0%
Others	0.0%	0.0%	5.9%	3.6%	0.0%	11.1%
Distribution of Contracts						
% General Contractor	83.3%	72.5%	51.5%	62.9%	77.5%	59.9%
% Subcontractors (specialty contractors)	8.3%	14.5%	24.9%	23.2%	13.0%	28.6%
% Design Build	0.0%	12.5%	12.3%	5.5%	8.3%	11.2%
% Professional Construction Mgmt (CM)	8.3%	0.5%	13.7%	8.4%	1.3%	0.1%
% Others	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.

\$ in thousands





**Table 18**  
**Variable Impacted by Occupancy Rate**

<b>% Occupancy Rate</b>	<b>93-**</b>	<b>93-95**</b>	<b>95-97**</b>	<b>97-99**</b>	<b>99+**</b>
Number of Hospitals	26	7	17	31	23
<b>Information about Facility</b>					
Avg. Number of Skilled Nursing Beds	167.6	219.3	180.1	222.0	194.4
Avg. Number of Intermediate Care Beds	37.3	52.5	80.0	64.8	109.7
Avg. Occupancy Rate	86.8%	93.5%	95.6%	97.8%	99.5%
Avg. Number of Admission per Year	273	226	213	181	113
Avg. Age of the Primary Structure (Years)	26.9	24.4	27.2	28.0	22.0
Privately Owned	84.6%	85.7%	82.4%	74.2%	82.6%
Government Owned	15.4%	14.3%	17.6%	25.8%	17.4%
Federal	0.0%	0.0%	0.0%	0.0%	25.0%
State	25.0%	0.0%	0.0%	12.5%	25.0%
County	50.0%	100.0%	100.0%	37.5%	75.0%
City	25.0%	0.0%	0.0%	25.0%	0.0%
Hospital District	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Construction Plans for Long Term Care Facility</b>					
Construction Expenditures in 1995	\$755	\$834	\$1,358	\$1,805	\$2,963
New Construction	7.8%	24.2%	39.1%	20.4%	15.3%
Maintenance & Repair	44.3%	35.8%	23.5%	36.4%	41.1%
Renovation/Remodeling	47.9%	40.0%	38.1%	43.2%	43.7%
General Nature of Construction					
Add Rooms for Residents	6.9%	6.0%	21.1%	7.8%	18.8%
Add Administration Space	2.7%	4.0%	10.0%	4.8%	10.0%
Add Suprt Space(dining, lounge, activity room)	8.2%	14.0%	5.8%	30.6%	23.8%
Updating to meet Building(fire) Code	15.7%	24.0%	7.7%	10.2%	11.5%
Others	61.7%	52.0%	48.9%	41.4%	28.8%
Construction by In-House Personnel (\$)	\$67	\$34	\$72	\$115	\$174
	(20.3%)	(5.6%)	(26.8%)	(13.6%)	(22.9%)
Construction Expenditures projected for 1996	\$509	\$639	\$490	\$533	\$1,166
New Construction	11.6%	31.1%	40.4%	15.8%	21.7%
Maintenance & Repair	51.9%	23.1%	30.5%	47.7%	43.5%
Renovation/Remodeling	36.0%	45.7%	29.1%	33.5%	34.2%
Construction Expenditures projected for 1997	\$659	\$1,600	\$1,534	\$1,280	\$5,040
New Construction	20.0%	27.8%	48.2%	23.6%	35.3%
Maintenance & Repair	39.1%	40.2%	34.7%	28.7%	19.9%
Renovation/Remodeling	40.9%	32.0%	16.3%	46.9%	44.7%
<b>Construction Budgets for the Next Five Years (1997-2001)</b>					
Remain Roughly the Same	42.3%	28.6%	17.6%	22.6%	17.4%
Increase Slightly	26.9%	14.3%	23.5%	25.8%	17.4%
Increase Significantly	7.7%	28.6%	41.2%	16.1%	34.8%
Decrease Slightly	11.5%	0.0%	5.9%	9.7%	4.3%
Decrease Significantly	7.7%	28.6%	11.8%	16.1%	13.0%
% of Construction that is Government Funded	15.7%	33.0%	13.3%	26.4%	47.5%

\$ in thousands

\*\*Category range includes the lower-end integer.





**Table 18 (Continued)**

**Variable Impacted by Occupancy Rate**

<b>% Occupancy Rate</b>	<b>93-<sup>**</sup></b>	<b>93-95<sup>**</sup></b>	<b>95-97<sup>**</sup></b>	<b>97-99<sup>**</sup></b>	<b>99+<sup>**</sup></b>
<b>Information on Maintenance</b>					
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area					
Exterior Walls	6.2	8.3	7.6	8.9	7.3
Interior Walls	3.8	7.0	7.3	6.5	7.6
Security	5.1	10.0	10.7	7.5	9.3
Flooring	3.1	6.0	4.2	4.1	4.4
Electrical	4.8	3.3	4.7	4.3	5.4
Roof	3.4	3.3	3.5	3.4	2.9
Structure	6.3	9.3	8.4	7.9	10.2
Windows	5.2	7.3	6.4	4.1	4.7
Handicap Accessibility	7.0	6.3	8.8	9.0	6.0
Mechanical (HVAC)	3.3	3.4	2.3	2.2	2.1
Plumbing	3.6	4.2	3.5	3.0	3.1
Lighting	4.8	7.0	5.4	4.8	5.0
Conveyance (elevator)	6.3	7.3	5.2	6.0	7.6
Others	*3.0	*1.0	*1.8	*5.0	*0.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area					
Federal, State, Local Laws	4.4	3.8	4.8	3.9	3.4
Materials (accelerated deterioration)	4.0	4.2	4.1	2.9	4.6
Construction (poor workmanship)	3.5	5.3	3.6	4.1	3.8
Normal Wear and Tear	2.5	2.5	2.3	2.2	2.4
Aging of Facility	1.3	2.1	2.4	2.4	1.9
Poor Design	2.6	4.8	3.7	4.1	3.3
Technology Replacement	3.0	3.8	4.6	3.6	3.8
Others	*2.0	*0.0	*8.0	*4.5	*4.0
<b>Information on Construction Contracts</b>					
# Construction Contracts to be awarded in 1997	3.3	4.3	3.3	2.9	2.4
Type of Construction Contracts Awarded					
% Lump Sum (fixed price)	79.0%	65.8%	89.6%	83.8%	85.7%
% Cost Plus	16.0%	26.7%	10.4%	12.2%	11.0%
% Others	61.7%	52.0%	48.9%	41.4%	28.8%
% of Contracts that are competitively bid	96.2%	82.9%	84.4%	92.8%	75.0%
Invitation for Bidding					
Open to All Contractors	34.6%	28.6%	41.2%	41.9%	47.8%
Restricted to Selected Firms on Bidders List	50.0%	42.9%	35.3%	41.9%	43.5%
Negotiation	11.5%	14.3%	11.8%	6.5%	8.7%
Others	3.8%	14.3%	5.9%	3.2%	0.0%
Distribution of Contracts					
% General Contractor	67.8%	73.0%	65.2%	59.8%	58.8%
% Subcontractors (specialty contractors)	32.2%	17.0%	13.7%	28.4%	8.3%
% Design Build	0.0%	12.0%	2.8%	10.8%	16.1%
% Professional Construction Mgmt (CM)	0.0%	0.0%	18.3%	2.8%	16.8%
% Others	0.0%	0.0%	0.0%	0.4%	0.0%

\* not an accurate representation due to either very limited number of or no respondent

\*\*Category range includes the lower-end integer.



**Table 19****Difference between Public and Private Facilities**

<i>descriptor</i>	<i>Public</i>	<i>Private</i>
Number of Hospitals	21	87
<b>Information about Facility</b>		
Avg. Number of Skilled Nursing Beds	285.1	173.3
Avg. Number of Intermediate Care Beds	131.2	61.4
Avg. Occupancy Rate	95.1%	94.7%
Avg. Number of Admission per Year	149	213
Avg. Age of the Primary Structure (Years)	28.2	25.5
Privately Owned	0.0%	100.0%
Government Owned	100.0%	0.0%
Federal	4.8%	0.0%
State	14.3%	0.0%
County	57.1%	0.0%
City	14.3%	0.0%
Hospital District	9.52%	0.0%
<b>Construction Plans for Long Term Care Facility</b>		
Construction Expenditures in 1995	\$512	\$1,910
New Construction	13.1%	21.4%
Maintenance & Repair	26.9%	39.9%
Renovation/Remodeling	60.1%	38.9%
General Nature of Construction		
Add Rooms for Residents	7.3%	13.9%
Add Administration Space	1.5%	7.3%
Add Suprt Space(dining, lounge, activity rm)	14.3%	19.9%
Updating to meet Building(fire) Code	6.9%	12.5%
Others	64.2%	41.4%
Construction(excl. maint./repair) by In-House Personnel	\$88	\$98
	(18.4%)	(18.4%)
Construction Expenditures projected for 1996	\$1,076	\$556
New Construction	19.7%	22.0%
Maintenance & Repair	37.5%	44.1%
Renovation/Remodeling	42.9%	32.3%
Construction Expenditures projected for 1997	\$1,328	\$2,091
New Construction	13.1%	32.5%
Maintenance & Repair	41.8%	28.7%
Renovation/Remodeling	45.1%	38.4%
Construction Budgets for the Next Five Years (1997-2001)		
Remain Roughly the Same	28.6%	26.4%
Increase Slightly	14.3%	24.1%
Increase Significantly	19.0%	25.3%
Decrease Slightly	9.5%	6.9%
Decrease Significantly	19.0%	11.5%
% of Construction that is Government Funded	68.9%	14.2%
\$ in thousands		



**Table 19 (Continued)****Difference between Public and Private Facilities**

<i>descriptor</i>	<i>Public</i>	<i>Private</i>
<b>Information on Maintenance</b>		
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area		
Exterior Walls	10.6	7.1
Interior Walls	6.1	6.1
Security	11.5	7.4
Flooring	4.8	3.9
Electrical	5.6	4.4
Roof	2.5	3.5
Structure	8.7	8.3
Windows	2.5	6.5
Handicap Accessibility	6.1	8.2
Mechanical (HVAC)	2.8	2.6
Plumbing	3.8	3.3
Lighting	4.1	5.5
Conveyance (elevator)	7.4	6.1
Others	*0.0	*2.3
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area		
Federal, State, Local Laws	4.6	3.9
Materials (accelerated deterioration)	3.8	3.9
Construction (poor workmanship)	4.1	3.9
Normal Wear and Tear	2.9	2.2
Aging of Facility	1.9	2.0
Poor Design	3.0	3.7
Technology Replacement	3.4	4.0
Others	*0.0	*4.6
<b>Information on Construction Contracts</b>		
Number of Construction Contracts to be awarded in 1997	3.6	3.3
Type of Construction Contracts Awarded		
% Lump Sum (fixed price)	97.2%	79.9%
% Cost Plus	2.8%	15.7%
% Others	64.2%	41.4%
% of Contracts that are competitively bid	95.0%	83.7%
Invitation for Bidding		
Open to All Contractors	90.5%	27.6%
Restricted to Selected Firms on Bidders List	9.5%	51.7%
Negotiation	0.0%	12.6%
Others	0.0%	4.6%
Distribution of Contracts		
% General Contractor	76.3%	58.2%
% Subcontractors (specialty contractors)	7.1%	24.7%
% Design Build	14.6%	7.7%
% Professional Construction Mgmnt (CM)	1.5%	10.4%
% Others	0.4%	0.0%

\* not an accurate representation due to either very limited number of or no respondent

\$ in thousands





**Table 20**  
**Facility Characteristics by Region**

<i>Region Number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Number of Hospitals	10	10	2	4	1	9	27
<b>Information about Facility</b>							
Avg. Number of Skilled Nursing Beds	150.9	205.3	115.0	102.7	14.0	176.7	240.1
Avg. Number of Intermediate Care Beds	74.3	75.0	0.0	123.3	144.0	68.2	72.9
Avg. Occupancy Rate	89.9%	94.4%	80.0%	95.6%	97.0%	95.5%	97.4%
Avg. Number of Admission per Year	262	176	n/a	208	48	152	163
Avg. Age of the Primary Structure (Years)	30.1	33.6	12.0	19.9	21.0	35.5	27.0
Privately Owned	90.0%	40.0%	100.0%	75.0%	100.0%	77.8%	81.5%
Government Owned	10.0%	60.0%	0.0%	25.0%	0.0%	22.2%	11.1%
Federal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
State	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
County	0.0%	50.0%	0.0%	0.0%	0.0%	100.0%	66.7%
City	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%
Hospital District	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Construction Plans for Long Term Care Facility</b>							
Construction Expenditures in 1995	\$1,449	\$627	\$2,400	\$1,136	\$8,800	\$266	\$1,389
New Construction	24.4%	0.0%	95.0%	42.8%	85.0%	12.3%	18.7%
Maintenance & Repair	30.0%	23.9%	5.0%	18.8%	5.0%	57.8%	44.1%
Renovation/Remodeling	45.6%	76.1%	0.0%	38.5%	10.0%	31.5%	37.2%
General Nature of Construction							
Add Rooms for Residents	9.3%	0.6%	49.2%	27.5%	40.0%	19.2%	5.8%
Add Administration Space	11.4%	0.3%	5.0%	0.0%	0.0%	4.8%	2.4%
Add Support Space	14.3%	29.1%	31.7%	20.3%	0.0%	8.0%	22.7%
Updating to meet Building(fire) Code	23.6%	5.0%	16.7%	25.0%	60.0%	10.0%	10.6%
Others	41.4%	55.6%	0.0%	27.3%	0.0%	58.0%	50.4%
Construction by In-House Personnel	\$91	\$11	\$0	\$35	\$0	\$16	\$87
	(15.8%)	(4.6%)	(35.0%)	(4.7%)	(0.0%)	(18.7%)	(26.3%)
Construction Expenditures projected for 1996	\$358	\$582	\$3,000	\$1,262	\$1,300	\$481	\$347
New Construction	18.9%	28.3%	95.0%	46.3%	0.0%	34.0%	16.5%
Maintenance & Repair	47.8%	10.3%	5.0%	19.3%	33.0%	35.3%	47.0%
Renovation/Remodeling	33.3%	61.4%	0.0%	34.5%	67.0%	30.7%	32.6%
Construction Expenditures projected for 1997	\$320	\$954	\$2,500	\$1,067	\$2,500	\$1,394	\$4,285
New Construction	36.3%	18.8%	95.0%	58.3%	40.0%	21.7%	40.9%
Maintenance & Repair	39.4%	32.8%	5.0%	23.3%	20.0%	24.7%	22.0%
Renovation/Remodeling	24.4%	48.5%	0.0%	18.3%	40.0%	53.6%	36.2%
<b>Construction Budgets for the Next Five Years (1997-2001)</b>							
Remain Roughly the Same	40.0%	30.0%	0.0%	0.0%	100.0%	22.2%	16.8%
Increase Slightly	10.0%	10.0%	0.0%	50.0%	0.0%	22.2%	33.3%
Increase Significantly	10.0%	40.0%	100.0%	25.0%	0.0%	55.6%	33.3%
Decrease Slightly	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%
Decrease Significantly	20.0%	20.0%	0.0%	25.0%	0.0%	0.0%	8.3%
% of Construction that is Government Funded	27.5%	35.0%	0.0%	25.0%	0.0%	36.0%	32.1%

\$ in thousands



**Table 20 (Continued)**

**Facility Characteristics by Region**

<i>Region Number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<b>Information on Maintenance</b>							
Source of Major maintenance and/or Repair Costs, "1" being the worst problem area							
Exterior Walls	10.3	11.0	4.0	5.3	n/a	10.0	7.0
Interior Walls	10.0	5.3	3.0	6.0	n/a	6.7	8.0
Security	7.3	5.0	n/a	n/a	n/a	10.6	9.3
Flooring	3.4	4.6	2.0	4.8	3.0	5.9	4.3
Electrical	4.2	3.3	n/a	3.5	4.0	6.2	4.5
Roof	3.0	5.3	1.0	4.7	5.0	2.6	3.9
Structure	7.8	6.3	n/a	7.5	n/a	9.5	8.7
Windows	6.0	3.5	7.0	8.0	n/a	7.0	6.0
Handicap Accessibility	4.0	8.7	n/a	6.3	n/a	10.3	9.1
Mechanical (HVAC)	3.3	2.7	6.0	4.8	2.0	2.1	1.9
Plumbing	3.9	4.0	n/a	5.3	1.0	4.3	2.8
Lighting	4.5	5.6	5.0	8.0	n/a	7.3	5.8
Conveyance (elevator)	6.3	6.0	8.0	9.0	6.0	7.3	6.3
Others	1.0	n/a	1.0	1.0	n/a	4.0	3.0
Cause of Significant maintenance and Repair Costs, "1" being the worst problem area							
Federal, State, Local Laws	3.4	3.8	2.5	3.3	n/a	5.0	4.4
Materials (accelerated deterioration)	4.3	2.8	3.0	3.0	n/a	4.8	4.2
Construction (poor workmanship)	4.4	5.8	n/a	4.3	n/a	5.0	4.2
Normal Wear and Tear	2.1	2.7	1.5	3.8	1.0	2.1	2.0
Aging of Facility	2.3	2.9	n/a	2.0	2.0	1.3	1.6
Poor Design	3.0	3.3	n/a	5.7	n/a	3.9	4.4
Technology Replacement	3.8	3.1	2.0	3.8	3.0	4.2	3.7
Others	n/a	n/a	n/a	n/a	n/a	n/a	3.8
<b>Information on Construction Contracts</b>							
# Construc. Contracts to be awarded in 1997	1.0	5.4	10.5	6.3	1.0	3.3	4.2
Type of Construction Contracts Awarded							
% Lump Sum (fixed price)	68.8%	81.3%	72.5%	82.5%	100.0%	96.7%	88.5%
% Cost Plus	31.3%	18.8%	27.5%	15.0%	0.0%	0.6%	7.2%
% Others	41.4%	55.6%	0.0%	27.3%	0.0%	58.0%	50.4%
% of Contracts that are competitively bid	93.3%	86.1%	55.0%	62.5%	100.0%	92.2%	84.8%
Invitation for Bidding							
Open to All Contractors	30.0%	50.0%	50.0%	25.0%	0.0%	44.4%	33.3%
Restricted to Selec. Firms on Bidders List	50.0%	40.0%	50.0%	25.0%	100.0%	44.4%	59.3%
Negotiation	10.0%	0.0%	50.0%	50.0%	0.0%	0.0%	7.4%
Others	0.0%	10.0%	0.0%	0.0%	0.0%	11.1%	0.0%
Distribution of Contracts							
% General Contractor	58.3%	67.3%	0.0%	78.3%	100.0%	54.4%	62.9%
% Subcontractors (specialty contractors)	5.0%	14.2%	100.0%	11.3%	0.0%	33.4%	21.6%
% Design Build	20.0%	17.9%	0.0%	11.3%	0.0%	5.4%	6.5%
% Professional Construction Mgmnt (CM)	16.7%	0.2%	0.0%	0.3%	0.0%	6.9%	11.4%
% Others	0.0%	0.4%	0.0%	1.5%	0.0%	0.0%	0.0%

n/a: data not available

\$ in thousands



## **Appendix**

- Survey of Hospital Construction Needs
- Survey of Long Term Care Facility Construction Needs





## CONSTRUCTION NEEDS OF HOSPITAL FACILITIES

### I. INFORMATION ABOUT THE HOSPITAL

- a. How many beds are in the hospital? Licensed beds: \_\_\_\_\_ Set up beds: \_\_\_\_\_
- b. How many beds are in each of the following?:  
Intensive/critical care rooms: \_\_\_\_\_ Private rooms: \_\_\_\_\_  
Semi-private rooms: \_\_\_\_\_ Wards: \_\_\_\_\_
- c. What is the average occupancy rate? \_\_\_\_\_% of set up beds
- d. What is average number of admissions per year? \_\_\_\_\_
- e. What is the age of the primary hospital structure? \_\_\_\_\_ years
- f. Is the hospital owned or operated wholly or in part by a government agency?  
\_\_\_\_\_ yes \_\_\_\_\_ no
- If yes, please specify: federal: \_\_\_\_\_ % state: \_\_\_\_\_ %  
county: \_\_\_\_\_ % city: \_\_\_\_\_ %

### II. CONSTRUCTION PLANS FOR THE HOSPITAL

- a. How much money was spent on construction at the hospital in 1995? \$ \_\_\_\_\_
- b. Approximately how were those expenditures distributed?  
New construction: \_\_\_\_\_ % Maintenance and repair: \_\_\_\_\_ %  
Renovation/remodeling: \_\_\_\_\_ %
- c. What is the general nature of the new construction or the renovation/remodeling?  
\_\_\_\_\_ % add patient rooms  
\_\_\_\_\_ % add administrative space  
\_\_\_\_\_ % add support space (laboratory, pharmacy, radiology space, etc.)  
\_\_\_\_\_ % add operating rooms  
\_\_\_\_\_ % add Alzheimer's ward  
\_\_\_\_\_ % add psychiatric ward  
\_\_\_\_\_ % other (specify): \_\_\_\_\_
- d. How much of this work (excluding maintenance/repair) will be done by hospital employees?  
\$ \_\_\_\_\_ or \_\_\_\_\_ %
- e. How much is anticipated to be spent on construction in this year(1996)? \$ \_\_\_\_\_  
How much will probably be spent next year (1997) ? \$ \_\_\_\_\_
- f. Approximately how will these expenditures be distributed?
- |                        | 1996    | 1997    |
|------------------------|---------|---------|
| New construction:      | _____ % | _____ % |
| Maintenance & repair:  | _____ % | _____ % |
| Renovation/remodeling: | _____ % | _____ % |



- g. Which of the following is most descriptive of your expected facilities construction budget for the next five years? (1997-2001) (check one)
- \_\_\_\_\_ Remain roughly the same      \_\_\_\_\_ Decrease slightly
- \_\_\_\_\_ Increase slightly      \_\_\_\_\_ Decrease significantly
- \_\_\_\_\_ Increase significantly (major addition anticipated)
- h. What % of the construction funds are obtained from a state or local government agency (e.g., direct appropriations, tax supported bonds)? \_\_\_\_\_ %

### III. INFORMATION ON MAINTENANCE

- a. Of the following, please rank those which have been the source of major maintenance and/or repair costs to your hospital beginning with "1" as the worst problem area.

external walls _____	windows _____
internal walls _____	handicap accessibility _____
security _____	mechanical (HVAC) _____
flooring _____	plumbing _____
electrical _____	lighting _____
roof _____	conveyance _____
structure _____	other (specify) _____

- b. Based on the past problems, describe any changes that would be made if any particular system or component were to be replaced.

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- c. Which of the following have been the cause of significant maintenance and repair costs to your hospital? Please, rank the following beginning with "1" as the worst problem area:

federal, state, or local laws _____	aging of facility _____
material (accelerated deterioration) _____	poor design _____
construction (poor workmanship) _____	technology replacement _____
normal wear and tear _____	other (specify) _____

### IV. INFORMATION ON CONSTRUCTION CONTRACTS

- a. Approximately how many separate construction contracts will be awarded next year (1997)? \_\_\_\_\_
- b. What type of construction contracts are generally awarded?
- \_\_\_\_\_ % lump sum (fixed price)
- \_\_\_\_\_ % cost plus
- \_\_\_\_\_ % other (specify): \_\_\_\_\_



- c. What percent of the construction contracts are competitively bid? \_\_\_\_\_ %
- d. How are contractors invited to submit bids? (check one)
- \_\_\_\_\_ bidding is open to all contractors
  - \_\_\_\_\_ bidding is restricted to selected firms on bidders list
  - \_\_\_\_\_ contract awards are made on the basis of negotiation
  - \_\_\_\_\_ other (specify): \_\_\_\_\_
- e. How are the costs of construction contracts distributed (in monetary terms)?
- \_\_\_\_\_ % general contractor
  - \_\_\_\_\_ % subcontractors (specialty contractors)
  - \_\_\_\_\_ % design build
  - \_\_\_\_\_ % professional construction management (CM) contract
  - \_\_\_\_\_ % other (specify): \_\_\_\_\_

## V. OPTIONAL

What is your **top** construction-related problem?

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What **trends** relating to construction, if any, do you see impacting hospital construction over the next 5-10 years?

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## VI. REQUEST FOR SUMMARY REPORT

If you would like a copy of the summary report please provide the following information. Please note that your comments and survey responses will be treated as strictly **confidential**.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Institution: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_





# SURVEY OF LONG-TERM CARE FACILITY CONSTRUCTION NEEDS

## I. INFORMATION ABOUT THE LONG-TERM CARE FACILITY

- a. Please describe your facility:  
Number of skilled nursing beds: \_\_\_\_\_ licensed: \_\_\_\_\_ set up beds: \_\_\_\_\_  
\_\_\_\_\_  
Number of intermediate care beds: \_\_\_\_\_ licensed: \_\_\_\_\_ set up beds: \_\_\_\_\_  
Number of boarding house (assisted living) beds: licensed: \_\_\_\_\_ set up beds: \_\_\_\_\_  
\_\_\_\_\_  
Number of independent living unit beds: \_\_\_\_\_ licensed: \_\_\_\_\_ set up beds: \_\_\_\_\_  
Number of other beds: \_\_\_\_\_ (please specify: \_\_\_\_\_)
- b. What is the average occupancy rate? \_\_\_\_\_% of set up beds
- c. What is average number of admissions per year? \_\_\_\_\_
- d. What is the age of the facility's primary structure? \_\_\_\_\_ years
- e. Is the facility owned or operated wholly or in part by a government agency?  
\_\_\_\_\_ yes \_\_\_\_\_ no  
If yes, please specify: federal: \_\_\_\_\_ % state: \_\_\_\_\_ %  
county: \_\_\_\_\_ % city: \_\_\_\_\_ % hospital district: \_\_\_\_\_ %

## II. CONSTRUCTION PLANS FOR THE LONG-TERM CARE FACILITY

- a. How much money was spent on construction at the facility in 1995? \$ \_\_\_\_\_
- b. Approximately how were those expenditures distributed?  
New construction: \_\_\_\_\_ % Maintenance and repair: \_\_\_\_\_ %  
Renovation/remodeling: \_\_\_\_\_ %
- c. What is the general nature of the new construction or the renovation/remodeling?  
\_\_\_\_\_ % add rooms for residents  
\_\_\_\_\_ % add administrative space  
\_\_\_\_\_ % add support space (dining, lounge area, activity room, etc.)  
\_\_\_\_\_ % updating to meet building (fire) codes  
\_\_\_\_\_ % other (specify): \_\_\_\_\_
- d. How much of this work (excluding maintenance/repair) will be done by facility employees?  
\$ \_\_\_\_\_ or \_\_\_\_\_ %
- e. How much is anticipated to be spent on construction in this year(1996)? \$ \_\_\_\_\_  
How much will probably be spent next year (1997) ? \$ \_\_\_\_\_
- f. Approximately how will these expenditures be distributed?
- |                         | 1996    | 1997    |
|-------------------------|---------|---------|
| New construction:       | _____ % | _____ % |
| Maintenance and repair: | _____ % | _____ % |
| Renovation/remodeling:  | _____ % | _____ % |



- g. Which of the following is most descriptive of your expected facilities construction budget for the next five years? (1997-2001) (check one)
- |  |   |
|--|---|
| <input type="checkbox"/> Remain roughly the same                             | <input type="checkbox"/> Decrease slightly      |
| <input type="checkbox"/> Increase slightly                                   | <input type="checkbox"/> Decrease significantly |
| <input type="checkbox"/> Increase significantly (major addition anticipated) |   |
- h. What % of the construction funds are obtained from a state or local government agency (e.g., direct appropriations, tax supported bonds)? \_\_\_\_\_ %

### III. INFORMATION ON MAINTENANCE

- a. Of the following, please rank those which have been the source of major maintenance and/or repair costs to your hospital beginning with "1" as the worst problem area.

external walls _____	windows _____
internal walls _____	handicap accessibility _____
security _____	mechanical (HVAC) _____
flooring _____	plumbing _____
electrical _____	lighting _____
roof _____	conveyance _____
structure _____	other (specify) _____

- b. Based on the past problems, describe any changes that would be made if any particular system or component were to be replaced.

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- c. Which of the following have been the cause of significant maintenance and repair costs to your hospital? Please, rank the following beginning with "1" as the worst problem area:

federal, state, or local laws _____	aging of facility _____
material (accelerated deterioration) _____	poor design _____
construction (poor workmanship) _____	technology replacement _____
normal wear and tear _____	other (specify) _____

### IV. INFORMATION ON CONSTRUCTION CONTRACTS

- a. Approximately how many separate construction contracts will be awarded next year (1997)? \_\_\_\_\_
- b. What type of construction contracts are generally awarded?
- |                                |
|--------------------------------|
| _____ % lump sum (fixed price) |
| _____ % cost plus              |
| _____ % other (specify): _____ |



- c. What percent of the construction contracts are competitively bid? \_\_\_\_\_ %
- d. How are contractors invited to submit bids? (check one)
- \_\_\_\_\_ bidding is open to all contractors
- \_\_\_\_\_ bidding is restricted to selected firms on bidders list
- \_\_\_\_\_ contract awards are made on the basis of negotiation
- \_\_\_\_\_ other (specify): \_\_\_\_\_
- e. How are the costs of construction contracts distributed (in monetary terms)?
- \_\_\_\_\_ % general contractor
- \_\_\_\_\_ % subcontractors (specialty contractors)
- \_\_\_\_\_ % design build
- \_\_\_\_\_ % professional construction management (CM) contract
- \_\_\_\_\_ % other (specify): \_\_\_\_\_

## V. OPTIONAL

What is your **top** construction-related problem?

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What **trends** relating to construction, if any, do you see impacting facility construction over the next 5-10 years?

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## VI. REQUEST FOR SUMMARY REPORT

If you would like a copy of the summary report please provide the following information. Please note that your comments and survey responses will be treated as strictly **confidential**.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Institution: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_











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